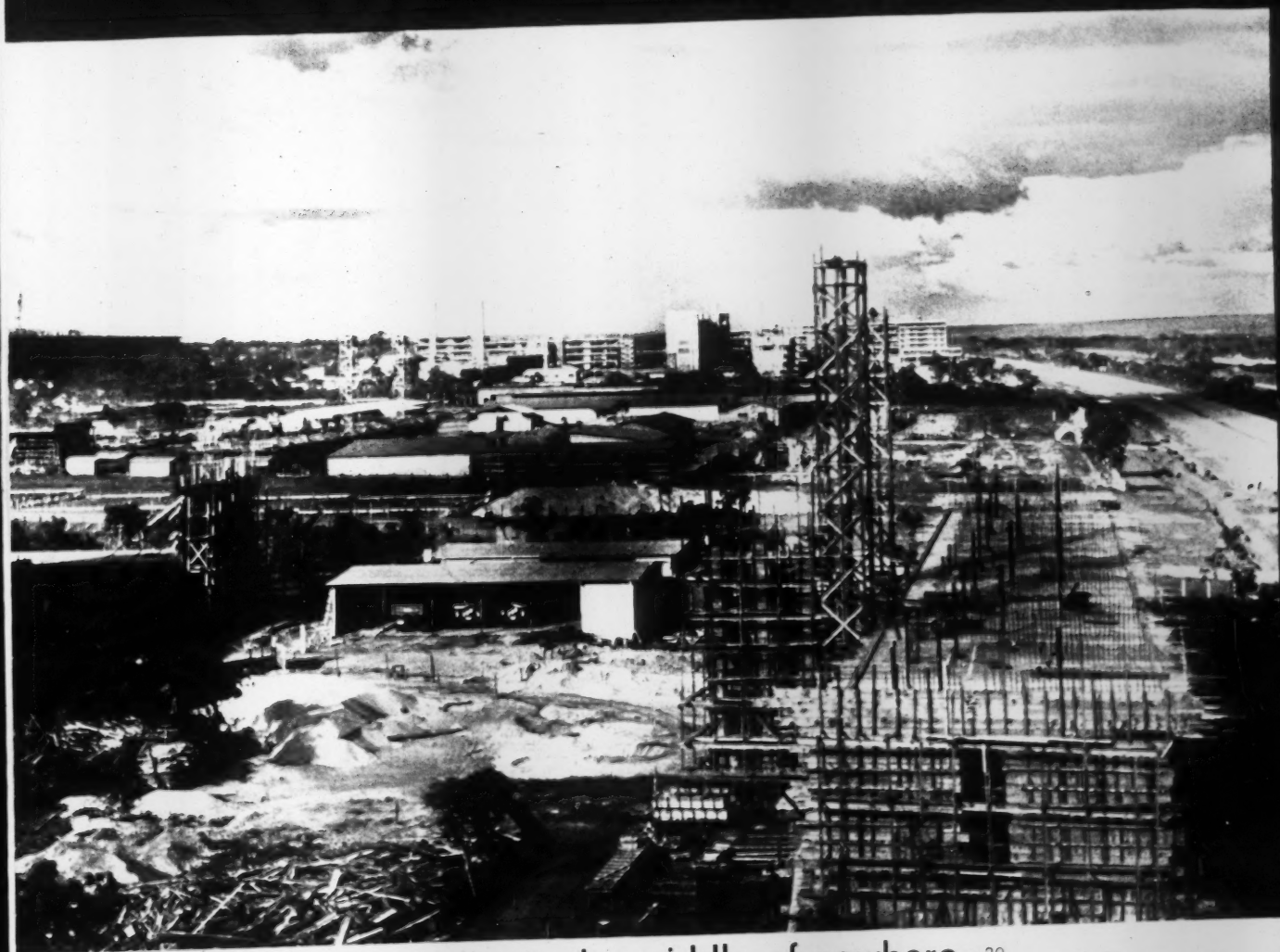
ENGINEERING NEWS-RECORD



Building a city in the middle of nowhere p.30

STEVENS HICE GS
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A McGRAW-HILL PUBLICATION

New steels are
born at
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How Armco Benefits You

If *you* are responsible for drainage structures, are you *sure* they are in good condition? An Armco Sales Engineer, called in to inspect failing drainage conduits, can possibly save many thousands of dollars!

How? By suggesting methods and materials to correct faulty conditions in time. Once an underground structure fails, it's too late for low-cost corrective measures.

So if you are concerned about the condition of a drainage conduit it may be worth your while to investigate. Then if a question exists, call in your nearest Armco Sales Engineer.

For 50 years, Armco representatives have co-operated with municipal and highway officials by inspecting failing sewers and culverts. But inspection is only the first step. What should be done? Experienced Armco Sales Engineers often can help you arrive at a low-cost solution.

Whatever the condition of the conduit, there is an Armco product to solve the problem economically —whether installation should be by threading, lining, jacking, boring or tunneling. Then, too, if you would prefer someone else to handle the job, Armco's Construction Department will do it on a fixed-price, sub-contract basis.

For inspection service or illustrated literature, write us. Armco Drainage & Metal Products, Inc., 6199 Curtis Street, Middletown, Ohio.
In Canada: Guelph, Ontario.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

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YOU CAN DO MORE SPRING ROAD WORK ON TIME AND AT LOWER COST WITH AN ALLIS-CHALMERS MODEL D THAN WITH ANY OTHER GRADER

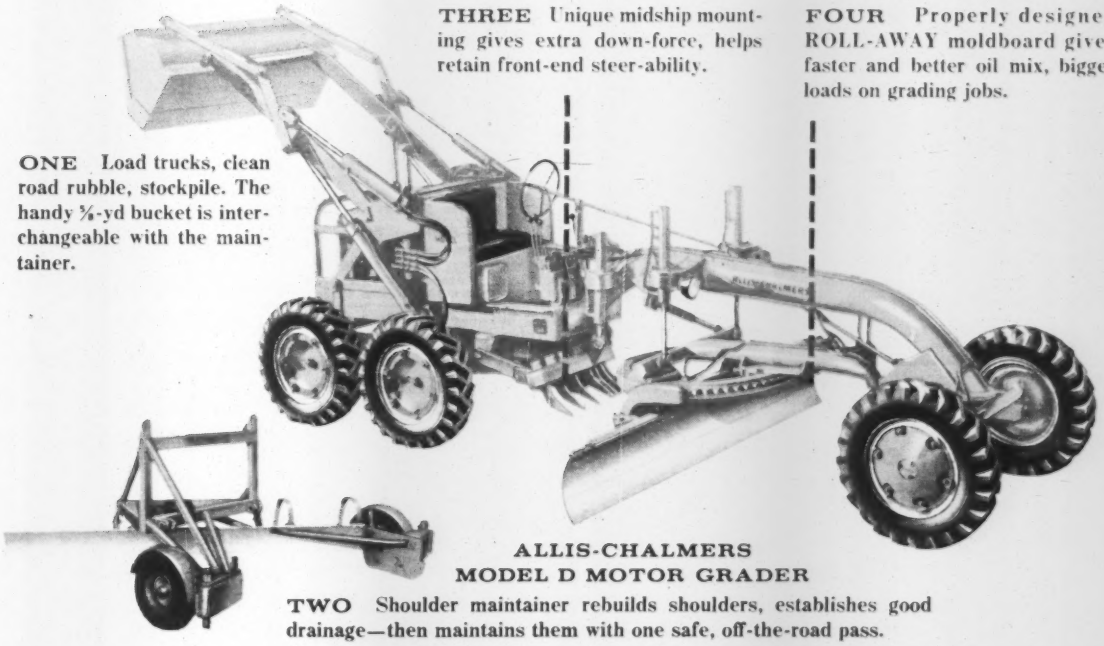
Worried about winter's leftover frost boils, potholes, washouts? Here's the solution—an Allis-Chalmers Model D. More than just a grader, the D's attachments make it a "one-man road gang."

The D costs so little you can own two or three for the cost of one "big" grader. Spotted strategically your D's cover more ground—get the jump on spring work and stay ahead all year.

THREE Unique midship mounting gives extra down-force, helps retain front-end steer-ability.

FOUR Properly designed ROLL-AWAY moldboard gives faster and better oil mix, bigger loads on grading jobs.

ONE Load trucks, clean road rubble, stockpile. The handy ¾-yd bucket is interchangeable with the maintainer.



ALLIS-CHALMERS MODEL D MOTOR GRADER

TWO Shoulder maintainer rebuilds shoulders, establishes good drainage—then maintains them with one safe, off-the-road pass.

Springtime is D-time all over America. This year, when spring uncovers winter-worn roads, be sure you're ready with a four-way, special purpose Model D.

See a Model D before you write bid specs for new road machinery. There isn't another grader that can do as many jobs for you at such low cost. Ask your Allis-Chalmers dealer to prove it with a demonstration—on your own roads.

4 Model D graders available
58-hp gasoline engine—8,800 to 11,450 lb
diesel engine also available

ROLL-AWAY is an Allis-Chalmers trademark.

move ahead with
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With Richmond Hanger Frame-Ty Systems for Slab Form Support

The effectiveness of slab form support is measured in three terms: speed, safety and economy. Richmond Hanger Frame-Tys are ideally suited for this type of construction. One popular unit is the "Free-Fit" type.

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Free-Fit Hanger Frame-Tys Give You—

1. Continuous heavier wire construction.
2. Nut tightening from top to eliminate need of scaffolding for under beam work.
3. Oversized coil to allow easier tightening of nut from above.
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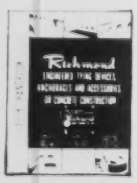
5. Positive means of tightening against beams or girders to prevent leakage of concrete.
6. *Published* safe loads and ultimate strengths.

The various types of Richmond Hanger Systems and their applications are detailed in the current Richmond Handbook. Send for your FREE copy—and, if you have specific concreting problems, let Richmond's Technical Department help you.

Write to:—



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EIGHTY-FIFTH YEAR OF PUBLICATION

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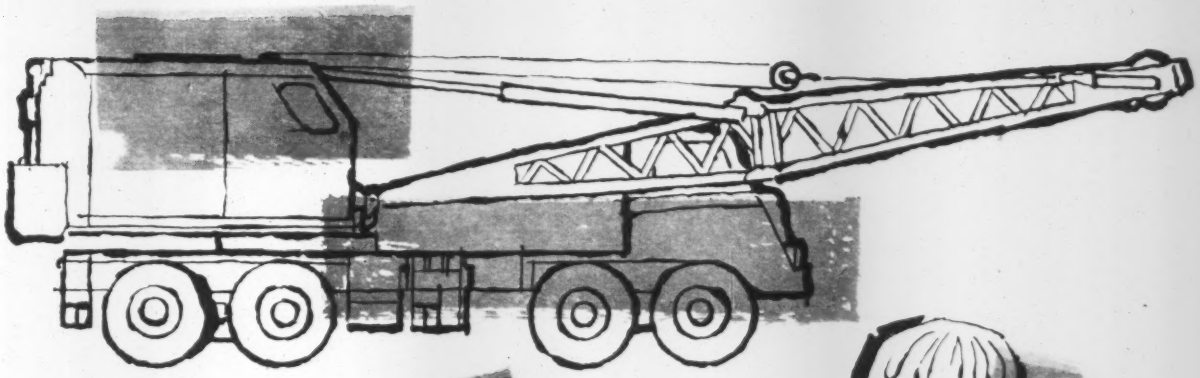

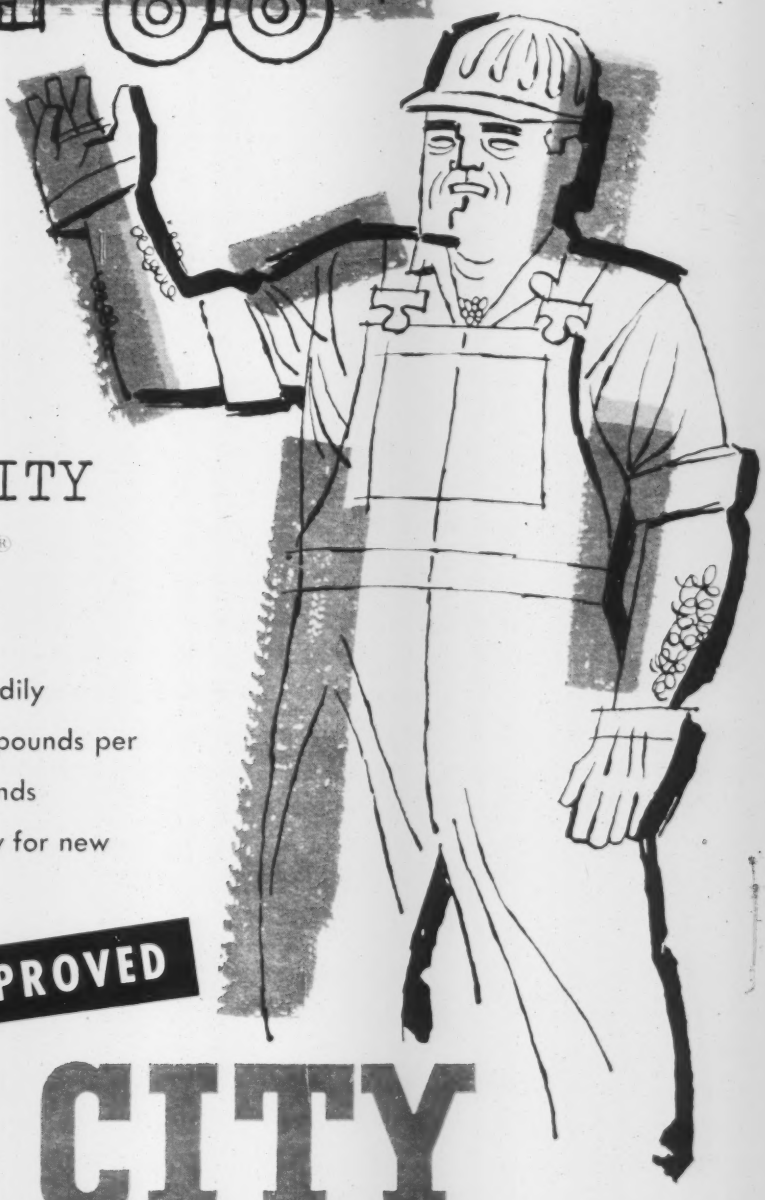

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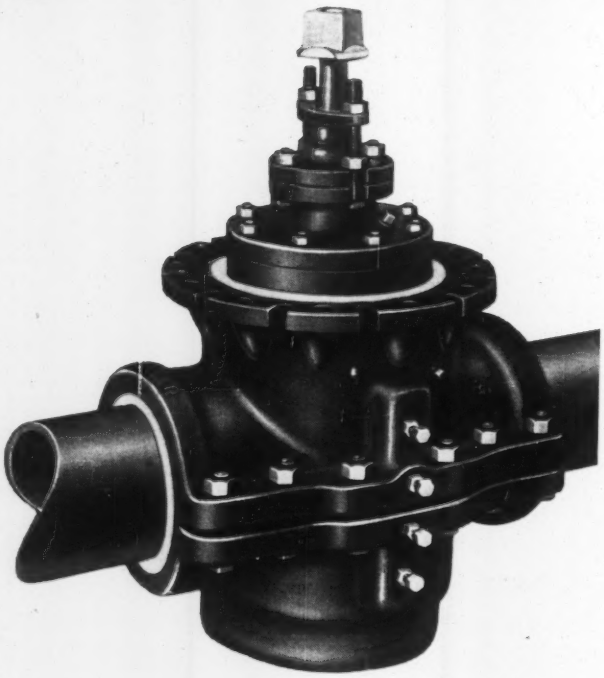


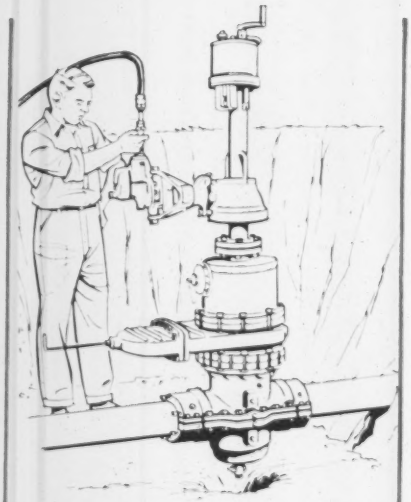
You can add needed gate valves anywhere in your water system—without a shut-down—when you use **MUELLER®** Inserting Valves. These valves are specifically designed to be quickly, easily installed in any existing 4", 6" or 8" cast iron main under full service pressure. There is no loss of water, no interruption of service and no loss of fire protection.

The gate valve mechanism of the Mueller Inserting Valve is identical to that of dependable Mueller AWWA Gate Valves and Mueller Tapping Valves. This permits standardizing on one type of valve mechanism for all your valve needs.

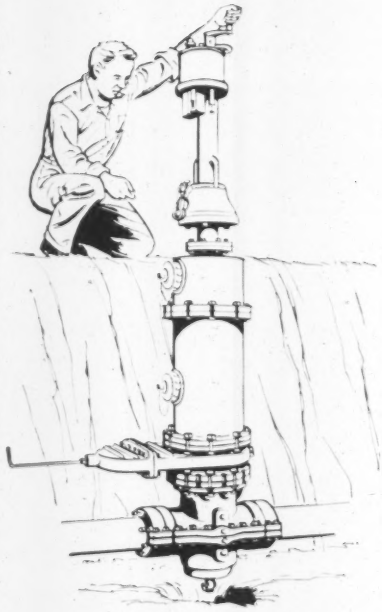
This product feature is typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product produced for the water works industry.

here's how with Mueller Inserting Valves

1. Bolt sleeve halves to main and calk end joints.



2. Cut out section of main with Mueller Drilling Machine.



3. Lower valve plug assembly into main and secure.

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B.F.Goodrich

B.F.Goodrich Rock Service tires reduce delays, save contractor up to $600 per hour

Western Contracting Corp. operates 2,000 vehicles to build highways, dams and air bases all over the country. Here the job is earthmoving for a new runway at Wright-Patterson Air Force Base, Fairborn, Ohio. The scraper above carries loads as heavy as 50 tons, works 22 hours a day. The tires are new B.F.Goodrich Rock Service, chosen because they substantially increase hours of service and reduce delays due to tire failure. Avoiding these delays saves the company $300 to $600 per hour in downtime expense.

Look at the husky double chevron Rock Service tread. It bites in to give maximum traction and resist sideslippage in forward or reverse. The B.F.Goodrich FLEX-RITE NYLON cord body withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This Rock Service body outwears even the extra-thick tread, can be retreaded over and over!

If you do earthmoving it will pay you to see the new Rock Service tire at your B.F.Goodrich Smileage Dealer's. He has a tire for every type of construction work. You'll find his address under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F.Goodrich dealer for entry blanks.

Smileage!

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *off-the-road tires*

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Heavy Construction Operators

GO FORD-WARD for greater payload... power

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

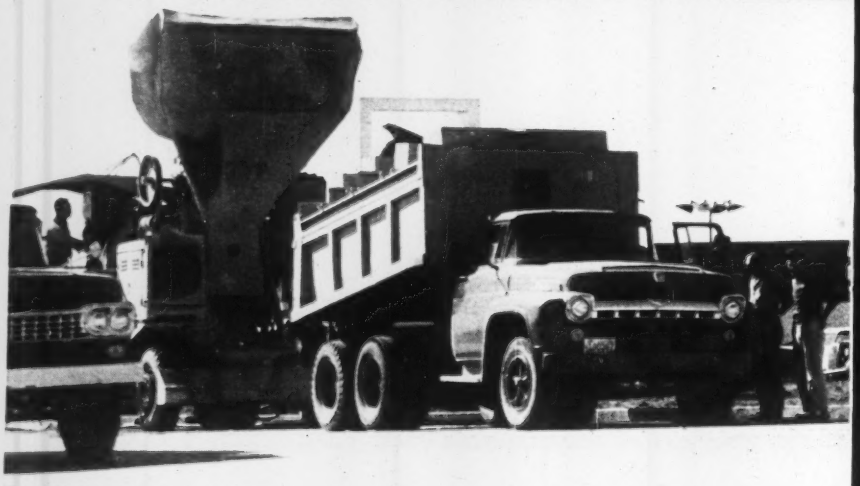
says William R. Collins, V.P.
William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

"We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas.
Northern Improvement Co., Fargo, N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road.



"Our drivers like Ford's power . . . they get heavy loads under way fast"

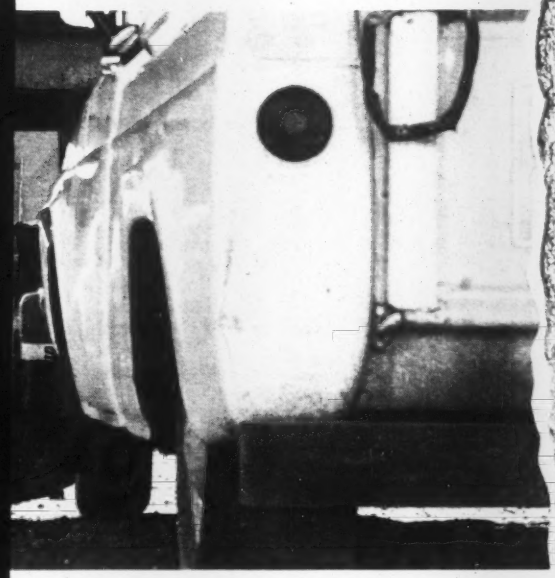
says George C. Wilson, General Superintendent
Schultz and Lindsay Construction Co., Fargo, N. D.

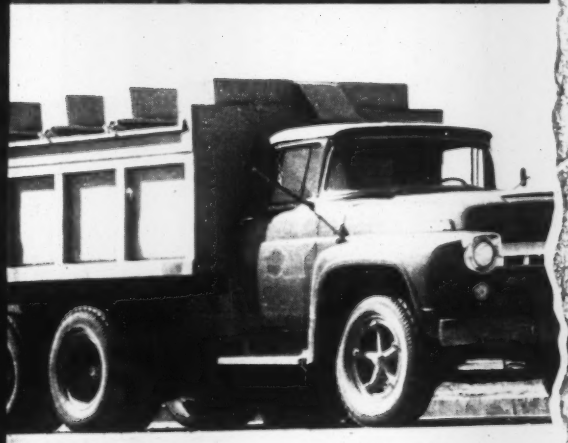
"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

FORD TRUCKS COST LESS

LESS TO OWN... LESS TO RUN... LAST LONGER, TOO!

..resale value!





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'59 Ford Pickups Win Economy Showdown U.S.A.

—average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's ½-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested – by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE						
'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes

The '59 Ford Sixes, *in every test*, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

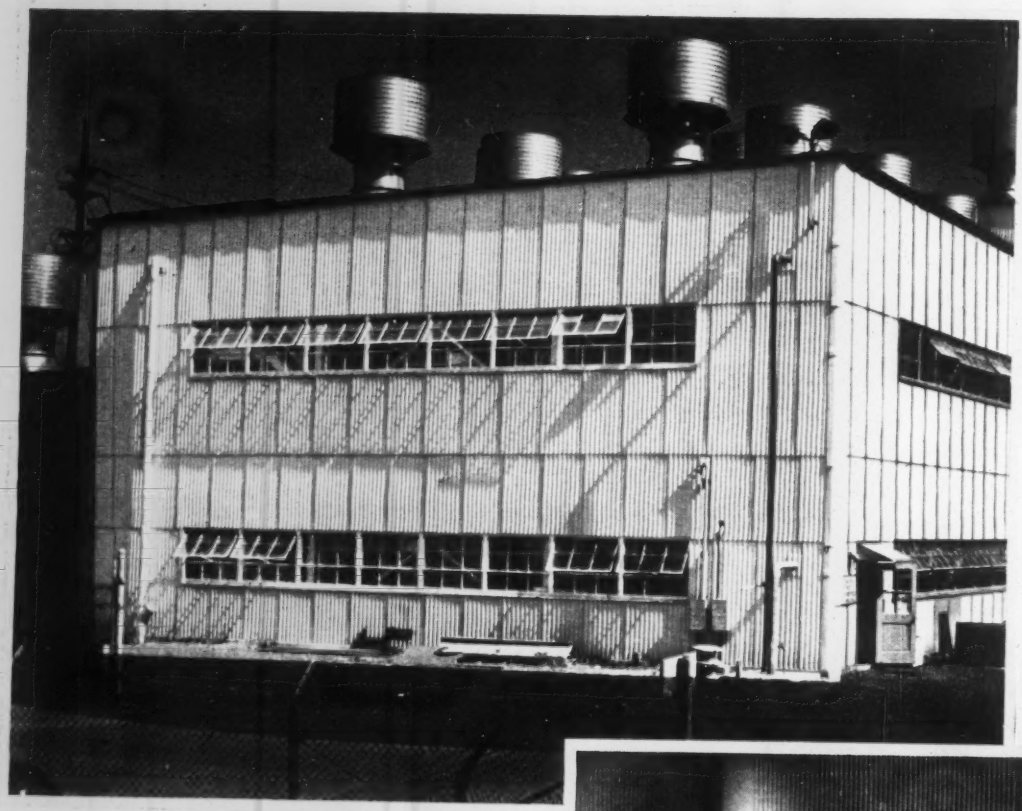
WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's *Economy Carburetor* is *standard at no extra cost.*

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?



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CORRUGATED TRANSITE®
cuts construction costs
. . . needs no maintenance

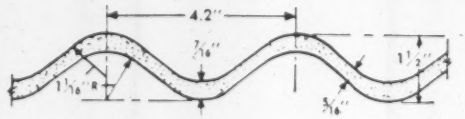
Made of two practically indestructible materials—asbestos and cement—Corrugated Transite looks and wears like stone. It actually becomes stronger and tougher with age. It can't burn, can't rot, can't rust.

Used for outside walls or roofing, Corrugated Transite is weatherproof and durable, requires practically no maintenance. Large sheets, low in first cost, require a minimum of framing, permit fast and inexpensive construction of industrial buildings as pictured above.

In the hands of an imaginative architect or engineer dramatic decorative effects can be obtained as in the case of the interior walls of the college auditorium illustrated at the right.

The natural color of Corrugated Transite is a light stone gray but it can be easily painted. Sheets can be combined with other building materials for contrast, variation or directional accent.

For a 32-page illustrated booklet, "CORRUGATED ASBESTOS TRANSITE," write to: Johns-Manville, Box 158, New York 16, N.Y. In Canada, Port Credit, Ont.



Corrugated Transite is available in sheets 42" wide (10 corrugations). Standard lengths are from 3' 0" to 12' 0" in increments of 6". Curved units are manufactured to order. Corrugated Transite may be applied to steel or wood framing.

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JM

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Reader Comment

Should Bid Shopping Be Curbed

►This refers to the article entitled (ENR Jan. 29, p. 77).

After reading it, I am wondering if another article should not now be presented entitled "*Should* Bid Shopping Be Curbed?". The subject of bid shopping, as all of us in the industry know, has been debated for many years, and the debate continues. The proponents for curbing this practice become highly emotional on the subject in periods of severe competition and dwindling profits.

But let us examine the problem objectively. What is Bid Shopping? It is nothing more or less than the trading or negotiating that must take place before a buyer and seller reach a meeting of the minds. This is basic under a free enterprise system and under which these great United States grew and thrived. Do the proponents for curbing bid shopping suggest, subtly or otherwise, that they prefer a system other than the free enterprise we know?

The construction industry exists because there is a need for the service it renders. The demand for this service is generated by the public. The industry therefore serves the public. In performing this service the industry must at all times endeavor to sell this service at a fair price or fair profit. The law of supply and demand is always at work. When too many contractors are in the industry for the amount of business available, competition is very severe and profits very low, if existent at all. When the reverse is true profits are quite satisfactory.

To restrict the period during which subcontract negotiations take place does not necessarily lessen the severity of the competition. When subcontractors need new business, won't they bid in an equally highly competitive manner under any system which prevents "bid shopping," just as they will when no restrictions exist? The prime contractors on public work are now experiencing this very condition.

History has shown that mere restrictions upon free negotiations between purchaser and seller, other than the "fixing of prices," have not resulted in better sub-prices or profits, since severe competition has driven the seekers of business to evasion, subterfuges, collusion and corrupt practices. The "fixing of prices" per se is dishonest, unlawful and must be frowned upon.

Your article having referred to the subject matter of separate contracts, permit me to make a few observations. Separate contracts are costly and detrimental to the best interests of the public, the owner, and the construction industry at large. Single contracts would result in lower costs to the public and greater profits to the industry by virtue of (a) substantially reduced administrative costs to both the owner and the contractor and (b) the greater efficiency in construction progress resultant from centralizing control and coordination in the single contractor.

Where separate contracts are flagrant, such as on public works, where the requirement is frequently established by law, administrative costs are excessive, repetitive, burdensome and top-heavy. Administrators of construction contracts for public agencies, where unfettered by political considerations, will be the first to admit that their administrative costs would be reduced substantially were they permitted to administer a single contract as against four or five or six separate contracts in the construction of a building.

From an industry viewpoint, the repose of complete control and coordination in a single contractor, skilled and efficient in such administration by virtue of training, experience and general "know-how," must result in faster, more positive and better adhered-to construction schedules.

In short, the construction industry will thrive and be better able to serve the public and the owner in a free and unhampered economy, uncontrolled by restrictions by way of laws, codes and agreements. Only high moral and ethical practices on the part of the seller, as well as the buyer, will prevent and eliminate the abuses complained of. Morals and ethics cannot be regulated by laws or rules.

IRVING L. LAZERE
Executive Vice-President
Psaltz & Fuhrman, Inc.
Contractors and Engineers
New York, N. Y.

. . . We Didn't Do It

►I am sure that the responsible, ethical contractors, general and specialty alike, are pleased that the ENGINEERING NEWS-RECORD in its issue of January 29, 1959, spotlighted the bid shopping and bid peddling evil. There is, however, a reference in this article that is so inaccurate that it may se-

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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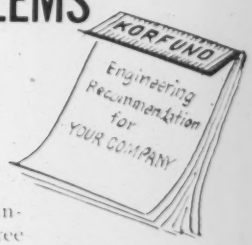

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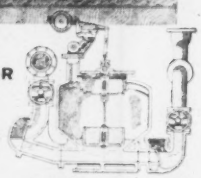

Twenty-Five Year Warranty

Subject to the limitations herein contained, YEOMANS BROTHERS COMPANY warrants its mechanically-controlled Shone Pneumatic Ejector against defects in workmanship and materials under normal use and service for twenty-five (25) years after installation as specified in factory recommendations. The Company's responsibility under this twenty-five year warranty is limited to replacing or repairing without charge, f.o.b. its works, any of the following components which, in the sole discretion of the Company, shall prove defective: receiver, mechanical air and exhaust control and the Shone inlet and discharge check valve. All other parts are subject to the manufacturer's warranty of one year.

Written notice must be given to the Company immediately upon discovery of any defect. The Company shall have the option of requiring the return of a defective component or material, transportation prepaid, before accepting a claim. In no event shall YEOMANS BROTHERS COMPANY be responsible or held liable for delay or damages of any kind of character resulting from or caused directly or indirectly by any defective component or material. This warranty shall not apply to any component or material repaired or altered outside of the Company's works unless the Company's written approval in that respect is first obtained and no allowance will be made for such repairs or alterations without the written consent or approval of the Company.

This Warranty is in lieu of all other warranties, expressed or implied, and is in lieu of all other obligations or liabilities on the part of the Company. No other person is authorized to vary the terms or provisions hereof in any respect.

YEOMANS BROTHERS COMPANY
D. W. Burgess
PRESIDENT

YEOMANS

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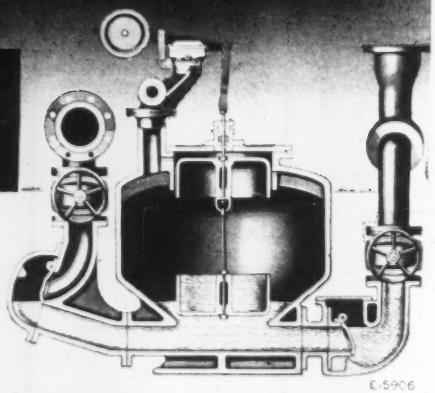
This is the SHONE® with mechanical controls. It is the original pneumatic ejector. The first SHONE® was installed in 1870.



E-5906

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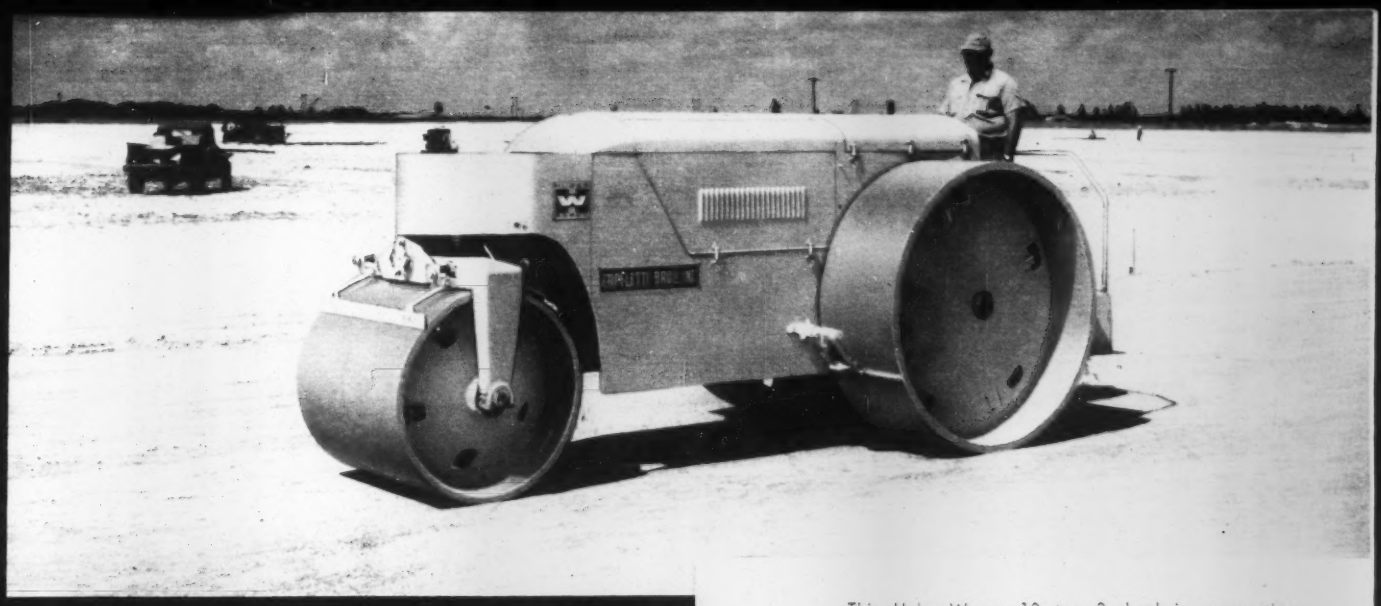


This Huber-Warco 10 ton 3-wheel is compacting a lime rock base for Capeletti Brothers of Miami.

H-W 3-wheel at work for Florida contractor

When called on to handle the rolling operations in a Hialeah, Florida, subdivision, Capeletti Brothers Inc., a Miami paving contractor, put their three Huber-Warco 3-wheel rollers on the job.

This subdivision, developed by the Palm Springs Development Corporation, included approximately 2000 homes and a new school. Capeletti handled the contract for the streets and roads in the project, as well as the construction of a 100′ x 200′ parking lot at the new school.

A typical comment about the performance of the Huber-Warco 3-wheel was voiced by Frank Worrall, the supervisor for Capeletti on this project. He stated, "The torque converter in this machine permits us to do better work with less effort." Mr. Worrall continued, "Efficiency is increased even at slow rolling speeds."

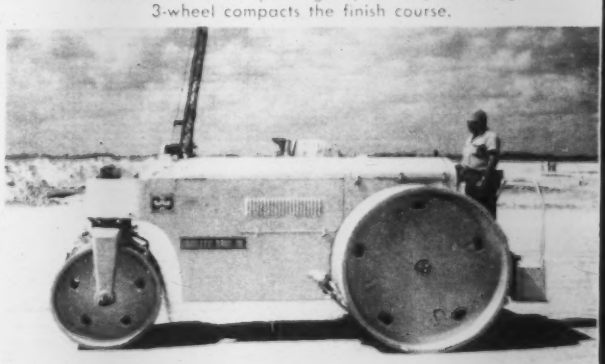
The combination of a torque converter and 2-speed transmission in the Huber-Warco 3-wheel means more economical operation, longer parts life and fast steering at all speeds.

Your Huber-Warco distributor will be glad to give you complete specifications for the standard and variable weight models in the 3-wheel roller line. He can arrange terms up to 36 months for you on the purchase of a new machine, and can provide you with a rental unit.

Huber-Warco on the job

Better work with less effort. Increased efficiency even at slow rolling speeds.

On the new school parking lot, this Huber-Warco 3-wheel compacts the finish course.



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HUBER WARCO

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MOTOR GRADERS

MAINTAINER

3 WHEEL ROLLERS

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ALLIED Jet Seal®

Original special equipment, exclusively developed by Allied, automatically proportions, mixes and places JET SEAL in a fast continuous operation.

Allied JET SEAL is available in five-gallon pails for easy handling, maximum protection and handy storage.

The New York State Thruway, originally stretching 427 miles from New York City to Buffalo, is being extended five ways—to Erie, to Niagara Falls, to Massachusetts, to Connecticut, and to New Jersey.

To protect the tremendous investment in this modern highway, the Thruway Authority seeks only the best materials for construction and maintenance. Here, Allied JET SEAL has won distinction as the preferred sealant for protecting the more than 500 bridges and paving structures along the highway. (JET SEAL is also being used to replace the original joint sealing material.)

Jet Seal is the Original Two-Component Polysulfide, Polymer Joint Sealing Compound

- Outstanding for its extreme ruggedness, superior adhesion, cohesion and low temperature ductility. (−20° F.)
- No cold flow tendencies even at 200° F. or more.
- Easily applied, cures quickly, and is ready for all traffic in one hour.

These are just some of the reasons the Thruway Authority believes that Allied JET SEAL, with its greater life expectancy, is more economical in the long run than the sealants it is destined to replace.

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riously interfere with efforts to correct those unfair trade practices.

On page 78 the statement is made that "In their fight for separate contracts, plumbers and other subcontracting groups have been consistently opposed by a coalition of the Associated General Contractors of America and mechanical specialty contractor groups (including the National Electrical Contractors Association, Mechanical Contractors Association, and Sheet Metal Contractors)." That is not so. The subcontracting groups named and the Council of Mechanical Specialty Contracting Industries, Inc., never have joined with AGC in opposing separate contract legislation nationally, in the states or in local communities. To my knowledge they have not individually opposed separate contract legislation any place, any time.

There are some factions that have gone to extremes in attempting to create an impression that what you have stated in your article is so. It is most unfortunate that ENR has repeated this falsehood.

NECA's Policy Statement declares the benefits of separate contracts. Therefore, NECA "will actively support such policies . . ."

Furthermore, the Council of Mechanical Specialty Contracting Industries, Inc., of which NECA is a member, has consistently taken a strong stand for fair bidding legislation.

Far from joining up with the AGC to fight separate contracts, members of the council have on many occasions told representatives of the general contractors that the best way the general contractors could defend and advance the single contract method would be for the general contractors themselves to take effective steps to stamp out bid peddling and bid shopping and other misuse of subcontractors and their bids.

GEORGE B. ROSCOE
Director of Public Relations
National Electrical Contractors Association
Washington, D. C.

For Your Calendar . . .

National Association of Architectural Metal Manufacturers, Monteleone Hotel, New Orleans, La., Apr. 12-15.

12th Annual Conference for Protective Relay Engineers, A & M College of Texas, College Station, Tex., Apr. 13-15.

Electric Heating Conference, Bellevue-Stratford Hotel, Philadelphia, Pa., Apr. 14-15.

Automotive Engineers 10th Annual Earthmoving Industry Conference, Pere Marquette Hotel, Peoria, Ill., Apr. 14-15.

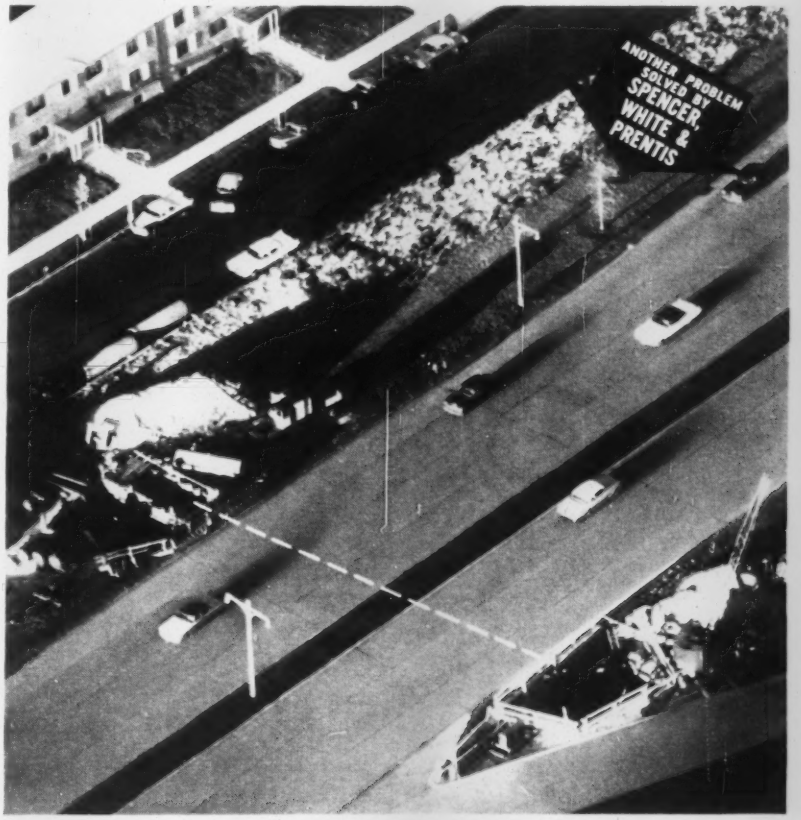
American Institute of Architects, Great Lakes Conference, Ann Arbor, Mich., Apr. 24-26.

Southeastern Instrument Society of America Conference, Gatlinburg, Tenn., Apr. 29-22.

Joint Meeting, Western Snow Conference and the Colorado River Forecasting Committee, Mapes Hotel, Reno, Nev., Apr. 21-23. Write N. S. Hall, Soil Conservation Service, 1485 Wells Ave., Reno, Nev.

Roofing and Sheet Metal Contractors, Palm Beach-Biltmore Hotels, Palm Beach, Fla., Apr. 23-25.

JACK 66-IN. PIPE UNDER 6-LANE HIGHWAY AS TRAFFIC FLOWS



Project: Installation of 48-in. water main under Shore Parkway at 89th St., Queens, N. Y.
Owner: New York City Department of Water Supply, Gas and Electricity
General Contractor: T. & T. Contracting Corp., New York City

Jacking a 66-in. diameter pipe 102 ft. from one end (dotted line indicates path) poses complex problems, all of which were solved advantageously on this project.

The operation was carried through without sinking a shaft at midpoint, as was originally planned. There was no interruption of traffic on the 6-lane highway as the steel shell was jacked under it, nor was there any settlement.

Close accuracy in estimating the necessary jacking force was one important feature. Another was the planning of work-shifts without any lengthy shut-downs, thus avoiding build-up of jacking pressure. A 48-in. concrete water line was later jacked inside the shell.

DESCRIPTIVE LITERATURE ON REQUEST

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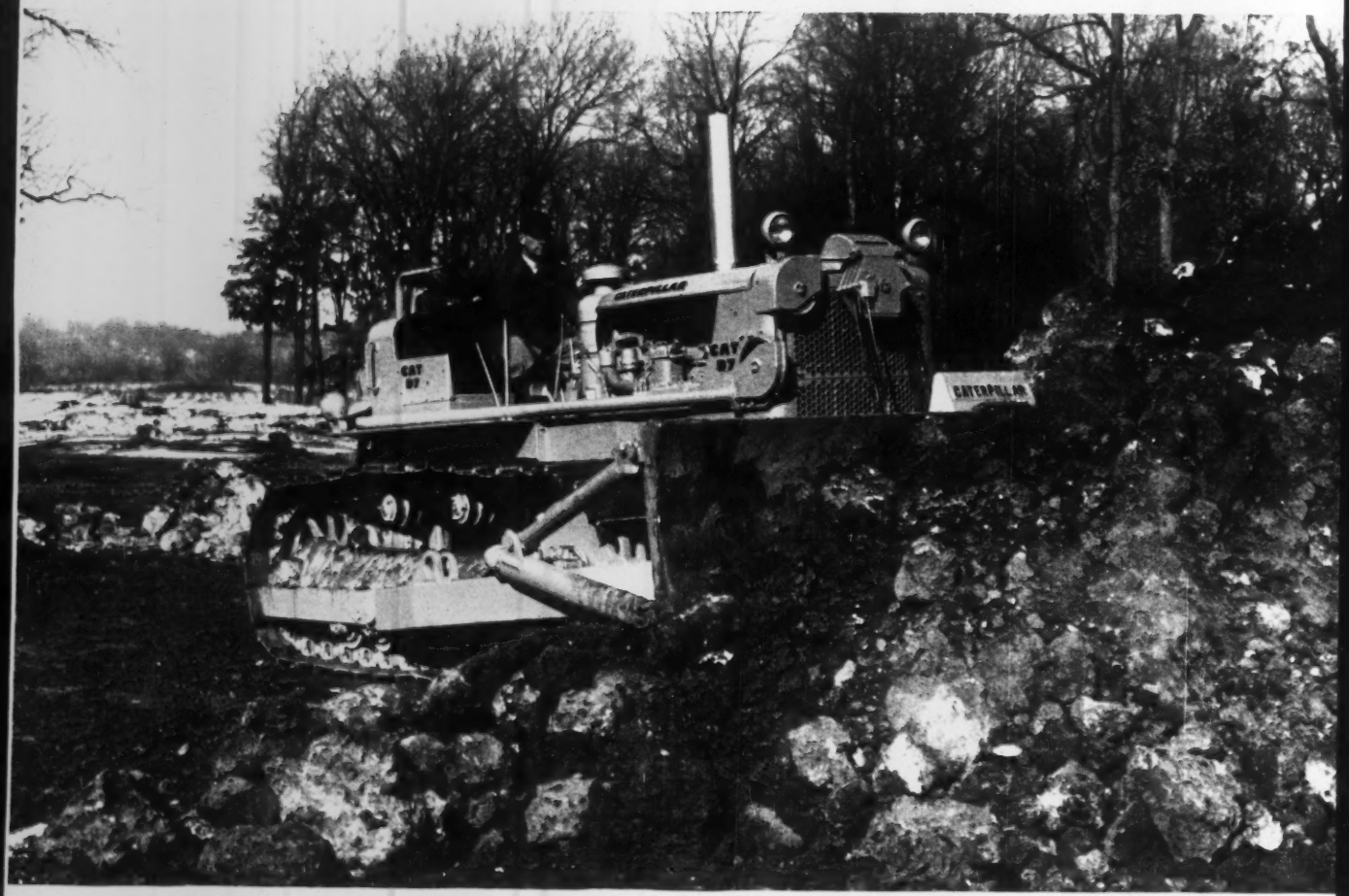
PAYDIRT

PROJECT PAYDIRT pays off again...*

NEW CAT D7 SERIES D



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TRACTOR

THE PAYOFF FOR YOU: MORE PRODUCTION AT LOWER OPERATING COST THAN EVER BEFORE!

By any comparison the *new* Cat D7 Series D Tractor is champ in its class. It packs 140 horsepower . . . matched with 80% more lugging ability than the previous model for greater production. And it delivers this production with lower operating and maintenance costs. The payoff is increased money-making performance *on your job*—performance that no other tractor in its power range can match!

Major improvements, developed by Caterpillar's Project Paydirt, account for the increased capacity of the new D7. These improvements affect the engine, power train and undercarriage. They're explained in detail on the right.

Along with the new features, the best of the time-tested features of the Series C model have been retained. One of many examples: the exclusive Caterpillar oil clutch, which delivers up to 2,000 hours—one whole season—without adjustment!

For complete facts about the leader in this class, see your Caterpillar Dealer. He's ready to give you the whole story about the new D7 Series D, as well as other achievements of Project Paydirt. He'll be glad to demonstrate, too, for this D7 really shines—in action. Say when and where—he'll be there!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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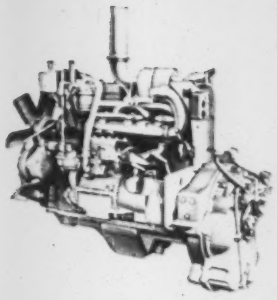
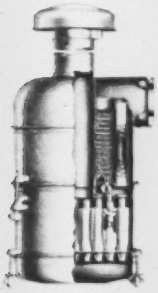
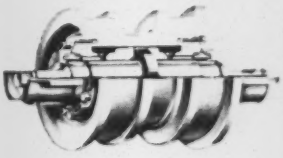
BORN OF RESEARCH
PROVED IN THE FIELD



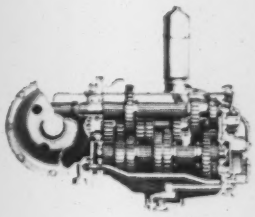
NEW TURBOCHARGED ENGINE. 140 flywheel horsepower . . . 112 drawbar horsepower make the new D7 even more productive. In-seat starting is available as an attachment. And in addition to the 9% horsepower increase, the new Turbocharged Cat Engine offers 80% more tractor lugging ability. The payoff: greater capacity to lug against big loads without stalling—for higher production, greater operating economy.



NEW DRY-TYPE AIR CLEANER. Pioneered by Caterpillar, this new dry-type air cleaner uses cyclone tubes and cellulose filter element to remove at least 99.8% of all dirt and dust from engine intake air—during every operating hour, even under the most severe operating conditions. Filter element can be cleaned and re-used. Cleaner can be serviced in 5 minutes. The payoff: longer engine life, greater economy, less maintenance.



SERVICE-FREE TRACK ROLLERS. New lifetime lubricated track rollers, carrier rollers and idlers on the undercarriage are protected by exclusive Caterpillar floating-ring seals. They need no lubrication until rebuilding, eliminate on-the-job roller lubrication. In addition, track roller life is increased by improved load-carrying design. The payoff: greater economy, longer life, less maintenance.



PRESSURE-LUBRICATED TRANSMISSION. Transmission bevel gear and pinion are now pressure lubricated with full-flow filtered oil, another development of Caterpillar's research program Project Paydirt. And new power train components, provided to transmit greater horsepower, feature a major increase in strength in the final drive gears. The payoff: longer lived gears and bearings for trouble-free operation.

A VOTING MACHINE UNLEASHES AN ADDED 300 MILLION GALLONS OF WATER DAILY!

A flick of a lever by an overwhelming number of New Jersey voters set in motion a long range program for supplementing the State's already over-burdened water resources with an additional 300,000,000 gallons of water per day.

The economic future of your community too, depends on farsighted water works planning—such planning deserves to be implemented with the best—LOCK JOINT CONCRETE PRESSURE PIPE.

Durable—low cost—easily installed—LOCK JOINT CONCRETE PRESSURE PIPE, because of its minimum maintenance requirements and permanent high carrying capacity, solves tomorrow's pipe line problems TODAY, economically.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

TECHNICOLOR ROADS?—Green highway pavement and yellow dividing lines would cut down glare and make roads safer. That's the opinion of Dr. Alden N. Haffner of the Optimetric Center of New York.

HANDWRITING ON THE WALL?—Construction companies may run into tough competition in the future from aircraft companies. Lockheed Aircraft Corp., Burbank, Calif., just bought Puget Sound Bridge & Dredging Co. of Seattle. Lockheed says Puget's construction experience will be valuable in building facilities for missiles and space vehicles.

BIG SPLASH—More than $440 million will be spent this year for swimming pool construction, says the National Swimming Pool Institute. It estimates that 40,000 home pools will be constructed, ranging in price from $2,000 to $5,000 each. Another 22,000 pools will be built for schools, motels and hotels, communities, apartment buildings and other ventures. These cost from $20,000 to more than $60,000.

PREDICTION—"Within a month, you'll be reading the good news in your newspapers that Congress has made the necessary funds available and the (Interstate Highway) program will continue on schedule." So says Rep. George H. Fallon (D., Md.), acting chairman of the House Committee on Public Works.

ICE WORK, IF YOU CAN GET IT—In the spring a canalman's fancy turns to thoughts of ice-free locks. So portable boilers are being put into service on the St. Lawrence Seaway to rush the melting of ice on stop logs at the locks.

POWER PLUS IN ALASKA—Ambitious hydro men should head north. The Federal Power Commission estimates less than one-half of one percent of Alaska's potential hydropower capacity has been developed. The new state's remaining 18 million kw represents about one-sixth of the undeveloped hydro capacity in the U.S.

WHAT FLOOR, PLEASE?—A Toronto realtor wants to build an apartment complex 123 stories high. The $138-million structure would have 4,600 apartments, a garage for 2,500 cars, shops, offices, swimming pool and bus terminal.

BIGGER THAN HOMEBUILDING?—Home improvement outlays will soon equal or exceed those for new dwelling construction, according to C. I. T. Credit Corp. (Spending for new dwellings hit $13.4 billion last year.) All the estimated improvement spending will not go to contractors, however. A generous portion will represent spending by do-it-yourselfers.

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WE GOT THE PILING"

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more and more contractors use The Foster Piling Rental Plan
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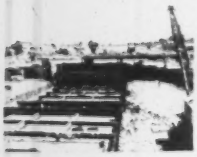

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WASHINGTON OBSERVER

Government construction outlays to go up

- **Highways, urban renewal will lead rise**
- **Housing, reclamation may slow down**

● **A vigorous rise in public outlays for construction over the next decade is predicted in a new study of basic trends in government spending.**

The study, a pioneering effort to predict spending trends agency by agency, is based on interviews with government officials in charge of the big spending programs. It was made by Otto Eckstein of Harvard for the Committee for Economic Development, a research organization backed by businessmen.

Copies of the study are being distributed to Congress, where appropriations subcommittees are giving it serious study. Repeated efforts have been made in the past to have Congress make such long-range budget estimates, but the lawmakers always refused.

The new report pictures a lively future for public construction, with some types gaining rapidly and others declining.

Six major types of construction will sweep from a present level of $10.8 billion to somewhere between $13.7 billion and $16.6 billion by 1968, Mr. Eckstein believes.

The higher figure assumes a liberal attitude toward spending while the lower one is based on a strong and continuing economy drive. The fact that only about $3 billion separates the two estimates indicates there's scant chance of a real slow-down no matter how hard the budget-cutters try.

The biggest rise is expected from highways. New construction and maintenance costs are put at $9.3 billion this year for all government levels —federal, state and local. This is expected to rise somewhere in the neighborhood of $3.5 billion or $4 billion a year by 1968, with most of it coming from the federal government.

Urban renewal is another fast mover. This year's expenditures are put at $76 million. Mr. Eckstein believes a liberal program could send this to $750 million in 1968 and that even under a continuing economy drive, the rise will be up to $350 million. This range is sharply lower than other experts in the field are predicting, but Mr. Eckstein argues that the many hurdles put in the way of renewal projects make a faster rise unlikely.

The drive to expand public housing is losing its steam, Mr. Eckstein believes. Costs will rise because federal subsidies are being paid over long periods, but he expects fewer starts.

The college housing program, now at $236 million a year, may rise slowly to $350 million in 1968, but a sustained economy drive could cut it to as low as $20 million, the report states.

Reclamation projects are another place where budget-cutters could slash outlays, Mr. Eckstein says. Under a liberal spending policy, he sees a possible rise to $400 million in 1968, compared to this year's $270 million. But if economy is the watchword, he thinks outlays could drop to $160 million. Reclamation starts are expected to taper off in the mid-1960s because of a scarcity of good sites.

There's still a big backlog of demand for rivers and harbors and flood control projects of the Corps of Engineers, the report says. Spending, now at $769 million a year, is expected to rise to at least $1 billion in 10 years.

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You cut installation cost . . .
Borden checking Service insures correct dimensions, fit and placement—each panel checked for size, each panel marked, and entire platform is laid out on our shop floor and checked against the shop drawing.

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Floor gratings and safety steps by Borden insure easy working, walking and wheeling surfaces because our precision manufacturing processes require finest quality materials and workmanship.

Free from warps or camber . . .
Factory tested and inspected, Borden gratings stay perfect through the uniformity of materials and design. No imperfections or irregularities of construction to cause warping or camber, trouble-free service assured for the life of the gratings.

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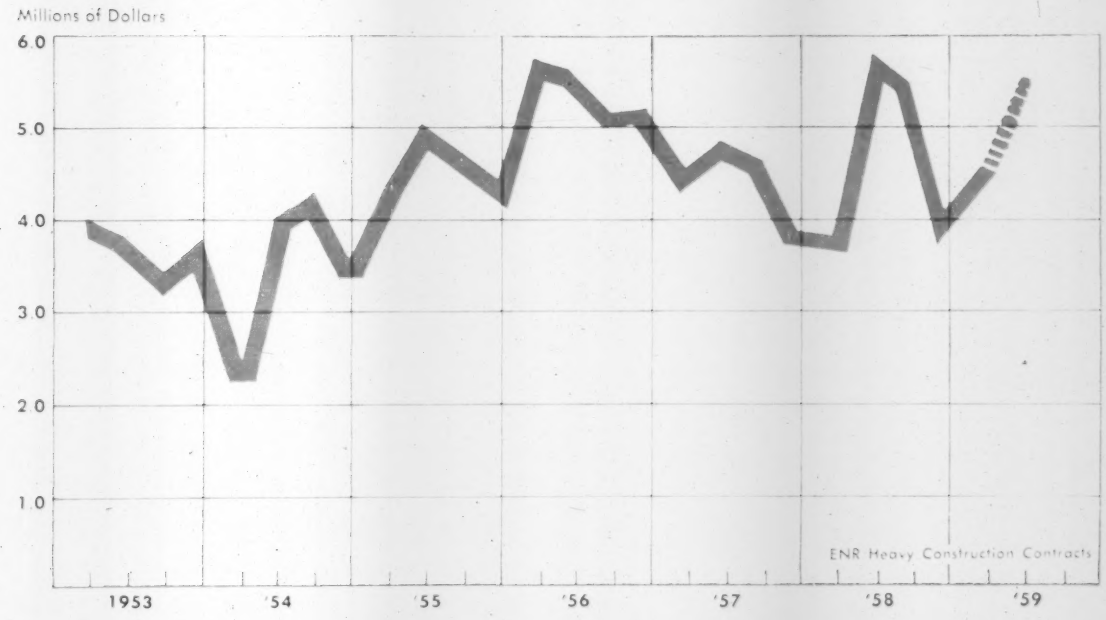


After a strong first quarter in construction contracts . . .

Second Quarter May Hit Record

Construction has just moved out of the second best first quarter on record. And new business in this quarter, April-June, may hit the record for a second quarter.

During the first three months of this year contract awards reported by ENR totaled $4.6 billion, second only to the first quarter in the boom year of 1956, when contracts rolled up volume of $5.75 billion.

Now contracts are chasing the second quarter record—set last year at $5.79 billion. Chances of matching it are good. Chances of beating it are slim, but can't be ruled out.

In 1958's second quarter the nation was coming out of a recession. Now the economy is working with a full head of steam. And construction will continue to stoke the boilers.

What's more, the market mix will be a healthy one. All categories will share the pie.

In 1958, public works took the spotlight, while private contracts started to come back from the long slide begun in late 1956.

This year, the rebound in private work has power behind it. It will be a big factor in the market. In the first quarter private awards of $2.3 billion topped 1958's first quarter by 30%.

Industrial building and commercial work will lead the private sector. Commercial is booming now. In the first quarter, commercial contracts of $526 million were 12% ahead of one year ago.

Industrial building in the first quarter showed a 32% gain over a year ago with contracts of $706 million. The swiftest rise came in March and the accelerated rate is expected to continue. March contracts were nearly double those of the January-February pace.

The rise in industrial building awards is backed by a continued strong flow of proposals. In March alone, proposed industrial plants had a total estimated construction cost of $374 million. February total was $353 million. The upsurge has seen $1.7 billion worth of industrial plant construction piled on drawing boards during the last six months. This is equal to the total for all of 1958.

This huge amount of industrial business to come will be reflected throughout the entire economy; improvement will feed on itself and swell all markets even more.

Mass housing contracts jumped 49% in the first quarter. They totaled $934 million, compared to $628 million a year ago.

Chances are dim for a comparable housing gain this quarter over a year ago. Volume will probably drop 25% below the high second quarter of last year—a quarter stimulated by the $1 billion Congress gave to the Federal National Mortgage Association (Fannie Mae) to buy at par FHA and VA mortgages of $13,500 and under.

But the effects of the 1958 spurt in new housing on the over-all economy will be great. It makes for big business today and tomorrow in appliances, textiles, and furnishings, not to mention the demand for goods and materials necessary before and during construction.

Public works will be in there punching. In this year's first quarter, contracts totaled $2.3 billion—a 12% gain over one year ago. Federal work showed a larger gain than state and municipal activity. Federal awards of $653 million were 54% above the first quarter of 1958. State and municipal contracts of $1.7 billion showed a 1% gain.

In this quarter state and municipal contracts will be propelled faster by big highway contracts and the $150 million Wanapum Dam on the Columbia River in Washington.

Federal awards will fall behind the

boom total of 1958's second quarter. They may even dip below this year's first quarter, mostly because of a tapering of Capehart housing activity. However, should some large missile bases come on the scene, federal contracts could maintain the first quarter pace.

All of this adds up to a vigorous economy. Construction is making its mark now. Look at the construction equipment industry. New orders for construction machinery during February were 49% above the low volume of February 1958, reports the McGraw-Hill Economics Department. And February orders were 18% above January.

Orders are now flowing in more rapidly than shipments are flowing out, says Robert G. Allen, president of Bucyrus-Erie Co.

The effects of construction are snowballing. As manufacturers up their sales, demand and competition will bring about decisions to invest in plant and equipment. Such actions speed the pace of recovery and build for strength.

The impact construction will have on the economy is shown by what already has occurred. Gross National Product (total production of goods and services) is estimated at an annual rate of $464 billion in the first quarter. This is a rise of 8.7% over the first quarter of last year.

Estimated spending of $10.9 billion for new construction put in place was 12% higher during the first quarter compared with the same period last year.

Most of the rise came from increased housing outlays, according to figures reported by the U. S. Departments of Commerce and Labor. In the first quarter, outlays for private dwelling units were up $840 million, or 32%, over the first quarter of last year. Outlays for public housing increased by $100 million, or 58%.

These increases roughly correspond to the rate of increase in private mass housing and public housing contracts reported by ENR last year.

Now the contract trend in these housing categories is no longer up, so housing probably will provide less lift to new construction spending in the next three months.

By contrast, spending for new industrial plants other than public utilities is down 34% from a year ago. This reflects the long decline in industrial contracts during 1957-58. **But it does not show the new upsurge in industrial building contracts** shown by ENR contract reports. Neither does it show the recent lift in proposed plant construction, which will be translated into construction spending late this year.

(Construction and building costs are hitting new highs again. For the story, see p. 109.)

Virginia says 'Pass' on Interstate . . .

But It Can Still Take the Money

What happens when a state decides not to match all its federal allocation for Interstate roads?

Virginia provided something of a test case last week when it decided to let pass some of the Interstate Highway funds allocated to it by the federal government for fiscal 1960.

There was little choice for Virginia. The state legislature had fixed highway funds for 1960 in the budget approved early last year. A few months later, Congress increased the amount of federal aid available for 1959 and 1960. Virginia thus found that it had more federal money to match than it had bargained for.

The state is putting up $11.7 million next year to match only $87 million of federal Interstate aid—instead of $14.3 million to match its full $105-million allocation.

The $2.6-million difference will go for non-federal-aid roads on Virginia's 48,000-mile system.

Virginia's squeeze on matching funds could be repeated in perhaps 20 other states. Many of them must keep up their non-federal-aid road programs—out of either political or economic necessity—and so might be faced with a shortage of matching funds for federal-aid work.

How does all this affect the Interstate Highway Program, which is programed for simultaneous completion by all the states in 1972?

At this point in the 41,000-mile program, there is no real cause for alarm. That's the feeling of the federal highway officials.

It's a 10-year building program, timed from the 1956 Highway Act. The target date for nation-wide completion is still distant enough to brook individual delays along the way.

However, the closer to the completion date, the more dangerous such delays could become.

What happens to the federal money the states decide to let slide for the time being?

The states that let their allocations slide won't lose the money.

Allocations can be used for two years beyond the fiscal period to which they are assigned. Thus, 1960 funds can be put to use by a state up to June 30, 1962.

But even if they don't take advantage of the late date, states can't permanently lose the federal Interstate money.

They will get it back in later allocations.

This is because the federal funds are allocated to states on the basis of cost of completing the Interstate mileage in each state. These cost estimates are revised and brought up to date at frequent intervals (originally three years for the first revision, but shortened to two years for the second).

Thus any work not started in one estimate period naturally goes over into the cost estimate for the next period.

There is no real fear that the Interstate Highway System will not be completed in 16 years because of state failure to match federal funds.

The chief concern still about the Interstate Highway System is the state of the Highway Trust Fund from which the federal apportionments come. Until Congress does something there will be no federal Interstate allocation for fiscal 1961, and there will be very little for 1962.

Nuclear Plants Won't Limit Hydro Needs

Regardless of increased construction costs and hard-to-find good locations for dams, hydropower development must be increased to keep pace with growing demand.

Although future nuclear power plants will compete with hydroelectric power, they too will need hydro plants for peaking and other purposes.

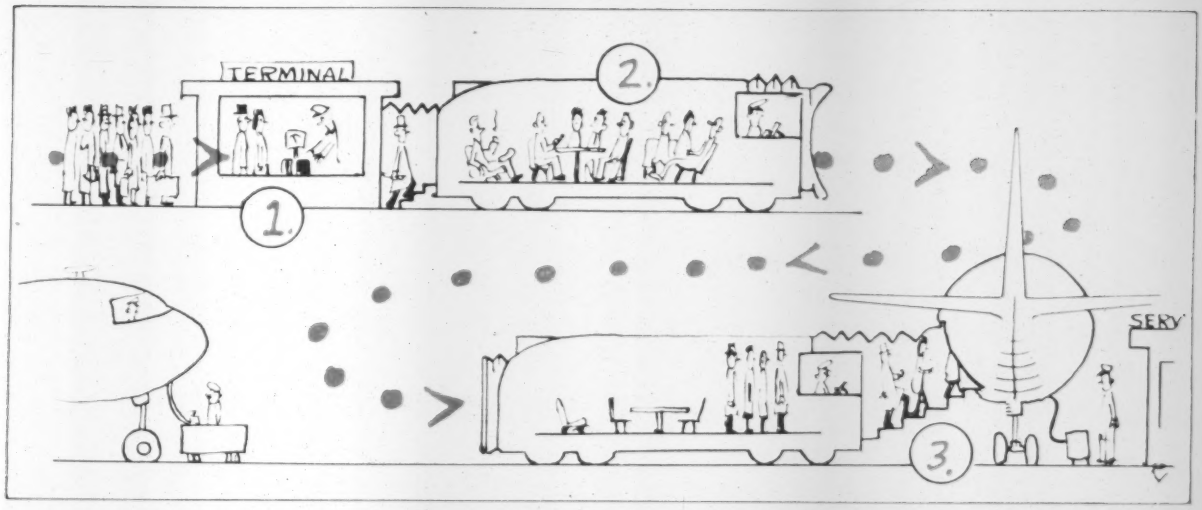
These points were made clear by speakers at the 21st annual American Power Conference in Chicago last week.

The U.S.'s present potential hydro power is 115 million kw. About 28 million kw of this is now developed, according to the Federal Power Commission's latest inventory.

Of the remaining 90 million kw of potential capacity, 11.2 million kw is in the construction stage and 18.6 million kw is in various stages of planning.

FPC's latest forecast of total power needs indicates a requirement of 275 million kw in additional capacity by 1980, according to Frank L. Weaver, chief of the division of river basins in the commission's Bureau of Power. This would bring the total installed generating capacity up to 422 million kw by that time. Present installed electric power of all kinds is 147 million kw.

As nuclear plants become competitive with other sources of power, they will normally be designed for base load operation at high capacity factors, Mr. Weaver said. Under such conditions, hydro plants will be especially valuable for peaking purposes.



Passengers enter terminal (1), board a mobile lounge (2) and ride to waiting plane (3).

New Airport Drops 'Long Walk'

Existing concepts of passenger handling and airport design are being revolutionized at Washington International Airport, now under construction at Chantilly, Va.

That long uncomfortable trek from the ticket counter to embarkation point will be eliminated at Chantilly. Instead passengers will be carried in luxurious, air-conditioned mobile lounges from the terminal to their planes.

The average airline passenger walked 950 ft from terminal entrance to plane last year. The mobile lounge will cut this hike to 350 ft.

By bringing the passengers to the plane, instead of the plane to the passengers, the designers can take a radical approach to airport layout.

On landing, jet planes can taxi to a service apron nearby. These stations will permit rapid refueling, cleaning and mechanical attention. Time on the ground is money wasted for the owners of fabulously expensive jet liners. The Chantilly design will reduce this time considerably.

Transporting the passengers to the aircraft eliminates the sprawling finger system required around major terminals serving large numbers of big ships.

The new method also eliminates all hazard and annoyance from jet blast, fumes and noise. Further, underground utilities and mechanics at the same site service the plane for flight while passengers are loading and unloading.

A compact terminal building will replace the customary complex and far-reaching finger system. In its preliminary design the terminal will be a long, narrow, two-story building. A cable-hung roof will span its width. Departing passengers will enter the offices of the various airlines on the top level. Arrivals will leave by the lower level.

Federal Aviation Agency, builder of the $100-million airport, announced its acceptance of this concept this week. It will be the world's first airport to be designed from scratch to accommodate commercial jet traffic.

The idea was originated and sold to the airline companies by Ammann & Whitney of New York City, prime consultants, and Eero Saarinen & Associates, of Birmingham, Mich., Burns & McDonnell, Kansas City mechanical and electrical engineers and Ellery Husted, architect, master planning adviser.

Officials believe that once the Chantilly operations have been observed for a time, other U.S. international jet terminals will adopt the mobile lounges. Best bets: Idlewild in New York, O'Hare in Chicago and Los Angeles International. But, one source says, "Miami, Houston and Dallas will be lured too, if only because of local pride."

Cost of the new passenger-handling system for Chantilly runs no higher than other plans, says FAA. Six potential manufacturers quote a selling price of about $100,000 each for the mobile lounges.

FAA will soon award a contract for manufacture of the lounge. A prototype, the first of the fleet, will be ready by the end of this year. About 20 will be needed when the airport begins handling jet flights about a year later. More will be added as airport traffic grows.

Glassed-in observation sections will give passengers a view of airport activity on the half-mile trip between the terminal building and the airplane.

A sealed passage connects the lounge to the loading gate of the terminal lobby. In this position, the lounge becomes an added room of the terminal itself.

A similar connection is made with the aircraft on the servicing apron. The lounge operator presses a button, and a pneumatic unit—resembling a telescopic camera bellows—moves out from the front of the lounge and envelopes the airplane doorway, forming a sealed passageway.

There are no stairs to climb at this point, either. The connection is adjustable to provide a smooth walkway to doors at any level or size. Big jets, equipped with two loading doors and carrying up to 180 tourist passengers, can be served simultaneously by a pair of mobile lounges.

On the aircraft servicing apron, individual airlines will lease loading positions for their planes. These parking spots will be on the sides of long rectangular service buildings.

To start airport operation in January, 1961, FAA and its design team are planning immediate construction of 50 such parking positions. Eventually, the airport will have 100 loading units, arranged in three parallel rows of about equal length.

Projected fast build-up of airport traffic accounts for the ambitious planning. Eventually 100 gate capacity will come in three phases. Immediate building for 1965 needs, optimum development to take care of 1975 traffic, and ultimate construction that allows for long-range growth factors.

Planning studies estimate 4 million passengers and 130,000 aircraft movements for Chantilly in 1965. These will rise by 1975 to 8.7 million arrivals or

departures of travelers, with 250,000 landings or takeoffs.

Chantilly is expected to develop large-scale international flight traffic in and out of the nation's capital. Planners foresee a potential for international flight traffic of 156,000 passengers a year by 1965 and 464,000 ten years later. This projection discounts the small number of passengers on international flights at the constricted Washington National Airport—less than 5,000 during 1958.

Adequate jet facilities at Chantilly will catalyze the growth of international traffic, the experts predict. Dirt is now flying on an $18-million C. J. Langenfelder & Son contract to complete three jet runways there next year (ENR Jan. 8, p. 22). Two of these are parallel north-south runways, 11,500 ft long by 150 ft wide, plus 25-ft shoulders on both sides. Terminal facilities will go between these two runways.

Under the same contract, Langenfelder is building a third runway of equal width, 10,000 ft long, running roughly southeast-northwest. Eventually a fourth runway will be built, parallel to the third.

The vast airport site will be 35 minutes' driving time from downtown Washington on an access road that will open when Chantilly starts operating.

Protective Minnesota Law Puts Road Funds in Doubt

A law passed by Minnesota earlier this year may have jeopardized the state's federal highway funds.

The law provides "tit for tat" penalties against builders resident in states discriminating against Minnesota contractors.

But the law "provides requirements which we believe tend to restrain competition," says the U. S. Bureau of Public Roads in a letter to State Highway Commissioner L. P. Zimmerman.

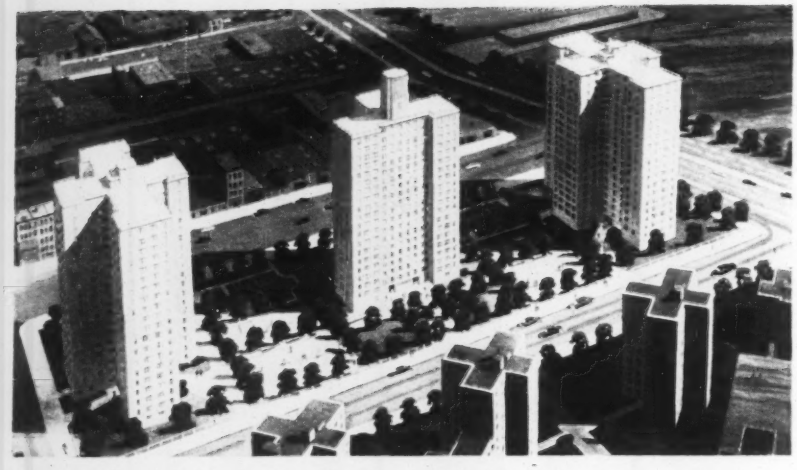
"There is a question as to whether or not we will be in a position to issue further authorizations or concur in award for projects now being advertised," BPR says.

Minnesota's attorney general, Miles Lord, has recommended that the measure be repealed or amended.

St. Paul Hospital Plan Up in Air Over Freeway

A new $16-million city-county hospital in St. Paul, Minn., may be built on top of a freeway. Architects studied six possible sites and ended with their recommendation up in the air over an east-west highway that's going to bisect the downtown area.

Architect Thomas Ellerbe says noise will be much less a problem with the hospital over the freeway.



Steel was an alternate for this New York job but . . .

Concrete Frames Still Win

Steel fabricators chose the battleground, but last week they lost the battle.

It all started about a decade ago when the New York City Housing Authority took alternate bids on concrete and steel framing. Concrete won and has been given preference in designs since.

Last year structural steel fabricators decided to demonstrate that steel framing is now competitive in cost with concrete. They put up $62,500 to pay for the steel design offered as an alternate for Woodrow Wilson Houses, the next Housing Authority project in Manhattan (ENR Nov. 20, 1958, p. 17).

This week bids were opened for the three 20-story buildings in the low-rent project.

Concrete came out $300,000 under the cost of the steel-frame design.

Both designs were prepared by Pomerance and Breines, New York City architects, with James Ruderman of New York City as consulting engineer. All bidders were required to submit bids on the two designs.

• How the bidding went—Separate bids were taken for foundations and general construction, heating and ventilating, electric, plumbing and elevator work. The total of the low bids for these items came to $4,813,345 for the concrete design and $5,131,213 for the steel design.

Almost the entire difference was in the bids for foundations and general construction.

For that item, a joint venture of Leon D. DeMatteis Construction Corp. and Leon D. DeMatteis & Sons, Inc., Elmont, N. Y., was low with a bid on concrete of $3,625,820. S. S. Silberblatt, Inc., New York City, was low on steel with $3,939,000. (The joint venture bid $4,135,820 on the steel design.)

• What was involved—Woodrow Wilson Houses will occupy the block between First and Second Ave., from 105th to 106th Sts. in northern Manhattan. It will provide 398 apartments ranging in size from 4½ to 7½ rooms.

The project consists of two 20-story cross-shaped buildings and one 20-story T-shaped building, with a total floor area of 436,000 sq ft. The cross-shaped buildings provide about 8,300 sq ft per floor. The T-shaped building provides 5,800 sq ft per floor.

The concrete design was for flat-plate construction. With the underside of each 5½-in.-thick floor slab painted to form the ceiling of the story below, story heights for that design were 8 ft, 6 in.

For the steel design, for which a separate vermiculite-plaster ceiling was specified, the ceiling height was 9 ft.

Foundations were the same in both cases—concrete mats because of poor subsurface conditions. This design deprived the lighter weight steel alternative of the cost advantage it would have had if piles could have been used. Walls also were identical—4-in. brick and 6-in. concrete-block backup.

Column spacing was rather close for the concrete design, about 10 to 12 ft. It ran somewhat larger for the steel design, ranging up to about 20 ft. The steel beams generally were 8-in., 67½-lb sections spaced 27 in. c-c. A total of 2,600 tons of structural steel were required for the three buildings.

Though concrete won this battle, the fight is not over. The NYCHA is expected to take bids on alternate steel and concrete designs for two more projects in the near future.

They may not get it, but...

Here's What the Airports Need

The Federal Aviation Agency has released the annual shopping list of the nation's airports—a 504-page document detailing $1.3 billion in improvements needed at 3,324 airports between now and 1962.

Jet-age influence shows up in the fact that almost half the improvements are linked to the requirements of jet airliners.

As FAA Administrator Elwood R. Quesada is the first to emphasize, the 1959 version of the national airport plan bears no relation to what the agency thinks the federal government should provide in airport funds or to what will actually be spent.

It is a statement of requirements only, based mostly on the estimates of the airport operators themselves, and without regard to who would foot the bill. As Mr. Quesada told a Congressional committee recently, the estimates range from "mere glints in the airport operators' eyes" to solid, well-documented needs (ENR Feb. 19, p. 25).

Nevertheless, the plan is the nearest thing to a true national assessment of airport needs, and as such is taken seriously on Capitol Hill. Both Congressional and industry advocates use it for ammunition in favor of a more vigorous federal-aid airport program.

The plan gives a detailed breakdown of the state needs, airport by airport, within each state. Listed requirements range from $3 million during the four-year period in Delaware to a whopping $201 million in California.

Of the total requirement, some 49%—or more than $636 million—is needed to provide adequate facilities for jet airliners at 95 airports. Another $367 million in improvements is required to handle the increasing flow of conventional air traffic at 950 airports.

General aviation movements—that is, business, agriculture, pleasure and instructional flying—call for $282 million in improvements at 2,279 smaller airports.

At airports serving the commercial airliners, the FAA says the estimated required development costs break down about as follows: pavement, $349 million, or 35%; buildings, $243 million, or 24%; site preparation, $188 million, or 19%; land, $105 million, or 10%; lighting, $37 million, or 4%; and miscellaneous, $81 million, or 8%.

Required improvements at the smaller, more numerous general aviation airports account for only $282 million of the total estimated requirements, and would involve $174 million for development of landing areas, $80 million for land and $28 million for building area development.

The estimated requirements, of course, are tied to forecasts of a tremendous boom in air travel.

The FAA estimates that, where the domestic airlines flew some 6 billion passenger miles in 1946 and 26 billion last year, movements will mushroom to 35 billion passenger miles in 1960, 49 billion in 1965 and 60 billion by 1970.

FAA notes that the magnitude of general aviation is often overlooked.

During 1957, 66,000 general aviation aircraft flew a combined total of almost 11 million hours. In the same year, the airlines logged less than half as many total hours.

Looking ahead, FAA estimates that general aviation flying will grow to 12 million hours by 1960, 16 million hours by 1965 and almost 20 million by 1970.

In the face of such tremendous potential growth, aviation interests have won a sympathetic hearing in Congress for their argument that the federal airport program must be stepped up.

The Senate has passed a bill authorizing $465 million in matching grants to finance the program through June, 1963. The House, perhaps in deference to a possible Presidential veto, trimmed the total to $297 million—still $97 million more than originally proposed by the Administration. Differences between the two bills have not been reconciled.

Mr. Quesada, in testifying against the Democratic program, argued that the annual national airport plan is misleading and exaggerated. He recalled that the 1958 airport plan listed 2,700 airports needing airport improvement but only 591 asked for federal aid.

"The rest either could not produce matching funds, or were able to do work without federal help, or were uninterested," he said. "On the basis of our actual experience, we can expect that, out of 3,000 airports surveyed for the 1959 plan, only about 600 will actually apply for the federal aid."

After discounting exaggerated estimates and the portion of the requirements involving terminal construction or improvements, which Mr. Quesada says should be paid for by the communities themselves, the FAA chief says, "Realistic requirements for airport development in which the federal government should participate come to about $500 million, not $1.2 billion."

Airport Needs: Cost by State

(in millions of dollars)

Alabama	$22.0	Nevada	$6.1
Alaska	37.0	New Hampshire	4.8
Arizona	22.2	New Jersey	26.5
Arkansas	5.5	New Mexico	12.0
California	200.7	New York	102.5
Colorado	30.3	North Carolina	13.0
Connecticut	11.6	North Dakota	5.5
Delaware	3.0	Ohio	35.4
Florida	17.8	Oklahoma	21.9
Georgia	22.6	Oregon	9.7
Idaho	5.9	Pennsylvania	80.7
Illinois	92.8	Rhode Island	4.5
Indiana	10.3	South Carolina	9.1
Iowa	8.6	South Dakota	6.9
Kansas	12.6	Tennessee	19.1
Kentucky	23.8	Texas	42.6
Louisiana	35.1	Utah	8.0
Maine	9.8	Vermont	4.7
Maryland	29.2	Virginia	16.1
Massachusetts	42.5	Washington	18.1
Michigan	26.1	West Virginia	10.9
Minnesota	23.3	Wisconsin	23.1
Mississippi	19.4	Wyoming	5.2
Missouri	25.8	Hawaii	20.0
Montana	9.9	Puerto Rico	10.1
Nebraska	14.7	Virgin Islands	5.7

Easy Come, Easy Go

A moving sidewalk now spans 127 ft across a busy downtown street at the El Cortez Hotel in San Diego. The "Travolator" connects the main building with a new motel and parking garage on the opposite side of the street.

Otis Elevator Co.'s moving walkway carries guests and employees back and forth on a series of safety cleated platforms, similar to the step-platforms of electric stairs. The installation can handle up to 7,500 persons an hour in each direction.

Where will the next one be installed? Probably in the Bank Street Station of the London underground, where Otis is placing equipment in a sloping, 300-ft long tunnel connecting two busy rail lines.

Price of Water Plan Goes Up

For the second time this year Gov. Edmund G. Brown of California has boosted financing requests for a water development program.

He is now urging the legislature to approve a $960 million bond issue. It would pay for California's water needs through 1985.

In January Governor Brown handed the legislature a $658 million water supply plan. He asked for approval of a $500 million bond issue and commitment of $158 million in tidelands oil revenues (ENR Jan. 29, p. 27). In March he asked for an additional $13.5 million to start construction of Oroville Dam this year.

If the legislature approves the latest request, the $960 million bond issue will go to a referendum in 1960.

The bond funds would go toward construction of the Feather River Project, involving the large dam at Oroville on the Feather River (see right), and a system of aqueducts to supply water-deficient areas in southern California.

The governor has already won some legislative help. The assembly passed a bill to provide a $170 million investment-reserve fund for water construction only. The bill is now in the Senate. Also, fiscal subcommittees of the Assembly and Senate have approved Governor Brown's recommendation of $80 million in water development funds for use in the fiscal year beginning July 1.

Bid Opening Delayed

Hopefuls have to wait extra five days on Oroville jobs

Opening of construction bids on the Oroville-Wyandotte Project has been postponed from April 30 to May 5.

Estimate of actual construction costs stands at about $45 million, with total costs estimated at from $55 million to $58 million. Bechtel Corp., San Francisco, has the design and supervision contract for the project, which is located on the South Fork of California's Feather River (ENR May 15, 1958, p. 30).

The comprehensive development scheme includes these major features:

- **Grass Valley Reservoir,** formed by a rockfill dam 196 ft high and 700 ft long at crest, with storage capacity of 93,000 acre-ft. Estimated cost, $3.4 million.
- **Sly Creek Reservoir,** including rockfill dam with earthfill core 260 ft high and 900 ft long at crest. Storage capacity, 59,000 acre-ft. Estimated cost, $4.8 million.
- **Woodleaf Power Development,** capacity 57,000 kva. Involves 18,400 ft of 12-ft pressure tunnel. Estimated cost, $10.3 million.
- **Forbestown Power Development,** capacity 31,000 kva. Includes a 60-ft-high diversion dam and 18,290 ft of light pressure tunnel. Estimated cost, $7.9 million.

The watershed is in the northern part of the state in a heavy rainbelt. Average annual rainfall in the area is 70 in., much of which will now be retained for domestic use as well as for power and irrigation.

Pacific Gas & Electric Co. is expected shortly to sign a contract with Oroville-Wyandotte Irrigation District guaranteeing the district $2.8 million annually for lease of power facilities and power, plus $312,000 for operational maintenance. These sums will be paid on a semiannual basis for 45 years.

OWID is pledged to issue bonds to the limit of PG&E support, but not in excess of $62 million, as authorized in a bond election at Oroville last year. The district expects to issue $58 million to $60 million in bonds, the precise amount to be determined by the interest rate and the low bid on construction.

Bids on the bond issue are expected to be opened June 1 or shortly thereafter. If the low bid on interest rate, after analysis of construction bids, is still too high to be serviced by the guaranteed PG&E payments, it would become necessary to make changes in the financing structure of the project.

What's Ahead in Sanitation?

Less waste water but more, better and cheaper treatment and maybe re-use, predicts an expert

Sparing use of water, then conversion and re-use may be musts for consumers in the not-too-distant future, a waste-control engineer predicted last week.

Also on the horizon, according to Thomas J. Powers, manager of waste control and utilization for the Dow Chemical Co., Midland, Mich., are the following practices:

- Much more industrial-waste treatment.
- Cheaper treatment processes.
- More and better incineration of wastes.
- Expanded use of subsurface disposal of wastes.

Mr. Powers made his provocative forecast before some 250 persons at the Eighth Southern Municipal and Industrial Waste Conference, in Chapel Hill, N. C. He keynoted the convention, which is sponsored jointly by the University of North Carolina (Chapel Hill), Duke University (Durham), and North Carolina State College (Raleigh).

• How to cut consumption—Raising the price of water might be the best water-conservation technique we could find, Mr. Powers said. Making the price reflect the whole cost has already produced results in some instances, he indicated.

"I have seen all of the costs for pumping, distribution, sewerage and treatment applied to the user in an industry with the result that . . . plant superintendents took a sudden interest in water conservation," he declared. "The over-all result—less pumping cost, and room for more plants without increasing the capacity of water mains, sewers and treatment plants."

Consumers generally could be coaxed in the same way to develop an urge to save water, Mr. Powers suggested. "If the true costs of water usage were applied, there would be pressure on the fixture and appliance manufacturers to design for more economical use of water."

• Why not re-use waste water?—"If the economic conversion of sea water to potable water is a horizon concept," Mr. Powers said, "then certainly the conversion of waste water to potable water should be a horizon concept."

Appliance manufacturers have been working for years toward beginning—maybe even completing—waste treatment at home, he said. They visualize a household unit that will turn waste water into drinking water at the push of a button. "Is this farfetched? I don't believe it is."

Such a unit, he said, would:

- Homogenize waste to condition it for filtering.
- Filter it through paper to remove solids for incineration.
- Ozonate it to oxidize soluble organics and sterilize.
- Filter it through granular activated carbon to remove remaining organics in preparation for ion exchange.
- Filter it through ion-exchange to prevent salt build-up.

The water then would be ready to drink.

• Industry wants good will—A tremendous surge of industrial waste-control activity is coming, Mr. Powers declared. The force behind it will be industry's need and desire to stay in the public's good graces.

At the moment, he declared, people are not yet ready to face up to the fact that we cannot have our cake and eat it. The fisherman screams for the blood of a polluting industry but he votes down a bond issue that would finance a reduction of his personal waste load. A state or municipality encourages industry to locate on a stream already overburdened. Economic development promoters influence the judgment of a waste-control agency.

We know why we need to clean up our streams and keep them clean and we know how to do the job, he said. "Our major problem is economic justification."

Industries are more in sympathy with clean-stream philosophy than municipal managers, Mr. Powers said. That's because industry is more vulnerable to public censure and action by control authorities, he believes. This puts the economic justification largely in the realm of public relations.

Public opinion is particularly effective where big industries are concerned, less so for smaller ones. The latter would find more economic justification for treatment facilities if Congress would allow fast write-off of capital outlays for air and water-pollution control.

• Dilution can be bad—Besides adding to costs all along the line, our heavy use of water results in a greater pollution load in the streams, Mr. Powers pointed out. While dilution in the stream cuts pollution load, dilution of the sewage has the opposite effect. Reason is that our best treatment processes produce an effluent with at least 10 parts per million of biochemical oxygen demand (BOD). With this irreducible minimum, the more the effluent volume, the more the BOD.

Less dilute wastes are "a must," therefore, Mr. Powers believes; and for the resulting smaller volume of wastes, more efficient treatment and disposal methods will follow.

• Clear beer—There is a big chance for improved treatment in solids separation, Mr. Powers said, particularly in primary treatment. He believes the answer is chemicals.

Screening, flotation and sedimentation remove about 60% of the solids content, he stated. But some plants back in the 1930s removed 90% with chemical treatment.

"There are polychemicals in the laboratory now that will coagulate the casein from milk, make beer clear and precipitate lignin," Mr. Powers said.

"Soon we will see materials that will coagulate other organic colloids. The potential of adding clay or incinerator ash to raw sewage together with coagulants should be and will be thoroughly investigated."

Improved primary solids removal might well be applied first in activated sludge plants, he suggested. The reasons: To expand plant capacity with minimum capital; or to eliminate waste activated sludge.

• Land fill no bargain—Dow Chemical is convinced that incineration is a necessary adjunct to wet-process industries, Mr. Powers said. "Our design always starts with a 55-gallon drum of thermal-setting plastic which must be burned without smoke." There are new incinerators coming that will burn up wastes without nuisance, he said.

He predicted that more cities and towns are going to find sanitary land-fill—a major alternative to incineration—too expensive when properly done and an intolerable nuisance when improperly done.

• Underground disposal—"It would seem that there is only one environment capable of absorbing this energy (of radioactive wastes) . . . the earth," Mr. Powers asserted.

The technology of storing wastes underground has come of age during the past 10 years, he said. More use of it is definitely coming.

Also presented at the two-day meeting were a number of papers on solids separation, chemical and biological treatment, solids handling and disposal.

Around the World . . .

• **"Great River Road"**—A study is about to get under way in Tennessee for a 140-mile-long road along the Mississippi River. It would be known as the Mississippi River Parkway.

• **Not enough money**—Pennsylvania stands to lose $46 million in federal matching funds on July 1 unless the state's motor fund revenue is stepped up, says State Highway Secretary Park H. Martin.

• **New engineering school**—Construction will begin this month on a new Engineering Center at Columbia University in New York City. The first unit of the new center will be an $8.3-million classroom building.

• **Hawaii airport**—Site work is under way for the new terminal building at Honolulu International Airport in Hawaii. It is the principal part of a $23-million overhaul of the field to accommodate jet planes. Completion is not expected until at least late 1960. Theodore A. Vierra is architect for the Hawaii Aeronautics Commission.

• **Balking at a bridge**—New York State officials refuse to approve the start of construction of the $40-million Newburgh-Beacon bridge over the Hudson River (ENR Mar. 19, p. 49). They claim that federal funds needed for part of the work are not assured beyond the first year of the two-year project.

• **Great Lakes short cut**—The U. S. and Canada have agreed on construction of an $8-million, six-mile channel to provide a new short cut between Lake St. Clair and Lake Huron. The channel will be 700 ft wide and dredged to a depth of 27 ft. It will allow two-way traffic by eliminating a hairpin turn in the Great Lakes waterway.

• **Peace River project**—Search for a damsite on the Peace River in British Columbia for the huge power plant of the Peace River Power Development Co. has been narrowed to three locations—two in Peace Canyon and the other at Ursula Creek, 90 miles west of Fort St. John.

• **Puerto Rico project**—Foundation work is under way in San Juan, P. R., for a $15-million building designed to house a newspaper, a radio station and a TV station.

• **Want a $40-million job?**—Hong Kong is taking bids May 22 on construction of a 5-million-cu-yd rolled earthfill dam on Lantao Island. The job includes a 1,700-ft diversion tunnel and a concrete morning-glory spillway. Bids go to Shek Pik Reservoir, Secretary, Tender Board, Colonial Secretariat, Lower Albert Rd.

• **Continuous pavement**—A joint research project to study continuously reinforced concrete pavements is under way by the Maryland State Roads Commission and the University of Maryland.

• **Ferry terminal**—A bill has been introduced in the Delaware legislature to build a Delaware terminal for a proposed Cape May-Lewes ferry to be operated by the New Jersey Highway Authority.

• **Million-kw nuclear station**—Britain's Central Electricity Generating Board plans to build the country's biggest nuclear power station on the River Severn in southwest England. Plan hinges on permission from Ministry of Power and local planning authority.

• **Nickel's worth of construction**—International Nickel Co. of Canada is pushing construction facilities at Thompson, in northern Manitoba. Within the next year, INCO plans to spend $66 million there to get its new smelter operating by July, 1960.

• **Pentagon shakeup**—The Joint Chiefs of Staff will have their Pentagon offices rebuilt for the third time in 12 years, at a cost of about $350,000. The staff organization is being expanded. No additional floor space is needed, but when a Pentagon suite changes hands, they don't just move the furniture.

• **Reprieve for building code**—Attempts by some New York State legislators to abolish the state building code ended with the code and its staff being transferred to the state Division of Housing. An independent building code commission was disbanded. The code has gained a nationwide reputation as a performance-type model code.

• **Argentine skyscraper**—Construction has started on a combination office building and shopping center in Cordoba, Argentina.

Nuclear Refuse

Opposition plagues firms in new disposal field

The disposal of radioactive wastes is a new and growing field in the U. S. and like any new business it is having its own particular birth pangs.

The Atomic Energy Commission has so far licensed eight concerns to collect and dispose of low level radioactive wastes. But local opposition is growing because of uncertainty over the nature of the business and fear about its safety.

Walker Trucking Co. of New Britain, Conn., is the latest company to receive a disposal license from the AEC. Its troubles are typical.

Walker is having difficulty in obtaining permission to operate a waste collecting station in the town of Portland, Conn. Portland is afraid the waste containers might be ruptured in a traffic accident on the way to the collecting station. The town has refused to allow the station to be used for encasing the steel waste drums in concrete and loading them on barges for disposal at sea. The company is taking the ban to court.

Coastwise Marine Disposal of Los Angeles has had similar problems. California's Fish and Game Commission has objected to the dumping spot 130 miles offshore (ENR March 26, p. 28). Sportsmen groups and a local health department also have voiced disapproval.

Another disposal concern, Industrial Waste Disposal Co., has run into difficulties in getting AEC permission to operate in Houston. AEC had given a notice of intent to issue a license to the Houston concern, but sports fishermen and nearby residents objected to plans to operate a collecting station and to the location of the proposed dumping area in the Gulf of Mexico. Hearings were held in Houston, and the AEC is now considering briefs from all parties concerned.

Before receiving an AEC license, all eight companies had to prove they were capable of handling the low level wastes. The licensees are limited to removing waste from medical and industrial research companies—radioactive animal carcasses, plants, blotters and similar experimental refuse.

Each of these items normally contains between one-millionth and one thousandth of one curie of radiation. Disposal companies are not permitted to keep more than 50 curies of radioactive waste in any one place at a time, and they may not collect a cumulative total of more than 700 lb of atomic source material during a standard two-year license period.

Six of the companies now dump the wastes in the sea. The other two use remote storage sites for disposal.

a short lesson in modulus control

for users of Strucsureseal*

In the past, this question has belonged to the "how high is up?" category. You can't answer it until you've asked (and received answers to) certain other questions. For example: how thick is the sling material? How elastic? How far must it stretch?

And so it is in selecting a Presstite STRUC*SURE*SEAL . . . polysulfide base synthetic rubber sealants. We first have to know how it's going to be used, the amount of movement to which the joint being sealed will be subjected, and even local conditions of climate. Knowing these things, we can recommend the best, the *right*, STRUC*SURE*SEAL and be sure of optimum performance.

STRUC*SURE*SEAL offers you this kind of modulus control: *predetermined elasticity to match your particular installation needs.* There's a STRUC*SURE*SEAL for use in normal expansion joints and for glazing. Then there's another for extreme movements, in cold weather. All are designed for maximum adhesion to dissimilar surfaces.

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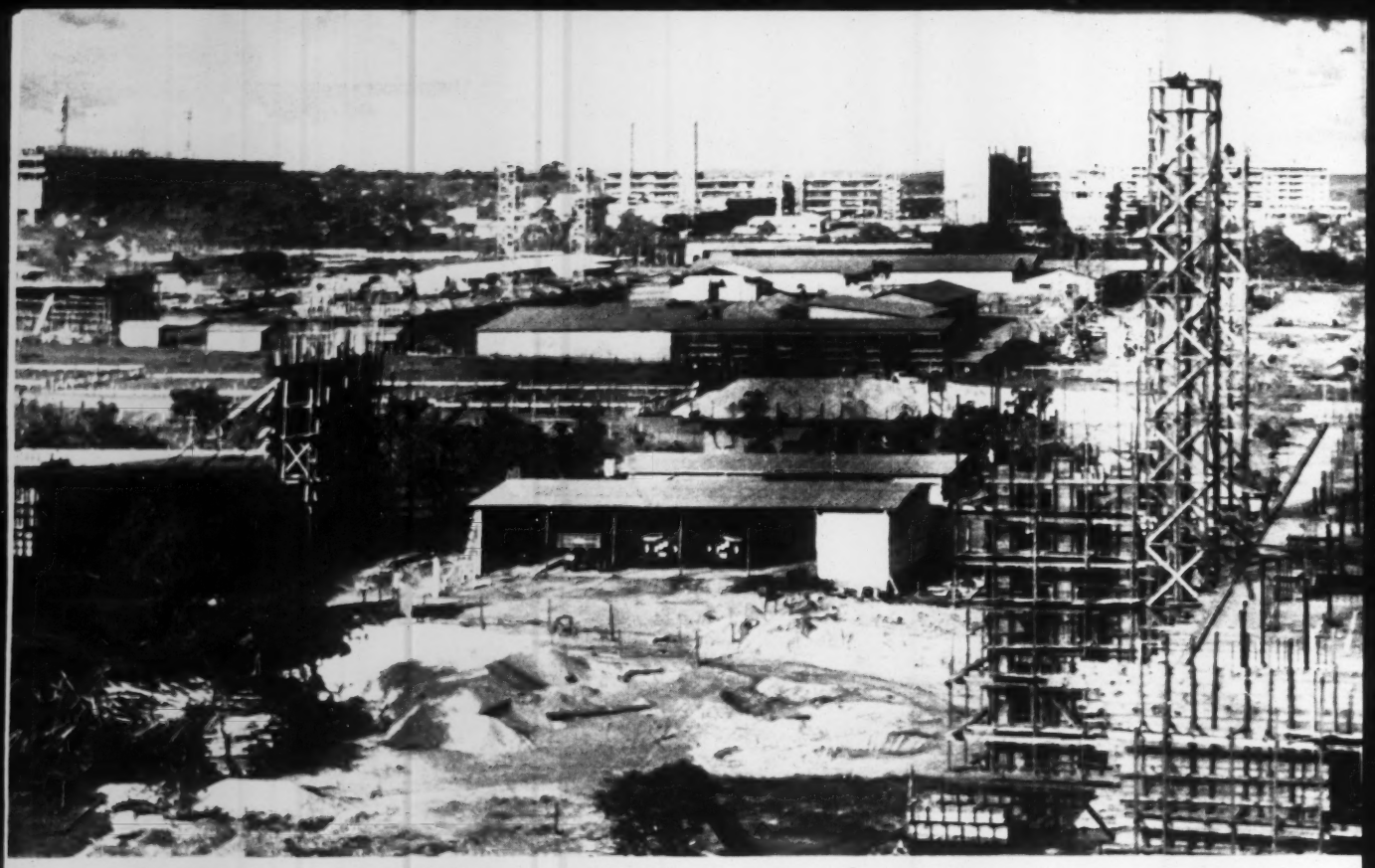
**Nos. 1175 and 1176 Series—polysulfide base synthetic rubber sealants.*

PRESSTITE Sealing Compounds

PRESSTITE-KEYSTONE ENGINEERING PRODUCTS COMPANY

K A P

A DIVISION OF AMERICAN-MARIETTA COMPANY • 3740 CHOUTEAU AVE. • ST. LOUIS 10, MO.



Now mostly a maze of half-completed buildings, equipment stockpiles and temporary housing,

Brasilia: A Modern Capital

SITE OF BRASILIA is an untracked grass plain 600 miles northwest of Rio de Janeiro, the present capital.

On a remote grasslands plain—midway between the Amazon jungle and Brazil's populated seacoast—a new city is taking shape. The city is Brasilia—a several-hundred-million-dollar gamble.

The city is being hacked out of the wilderness to become the new capital of Brazil.

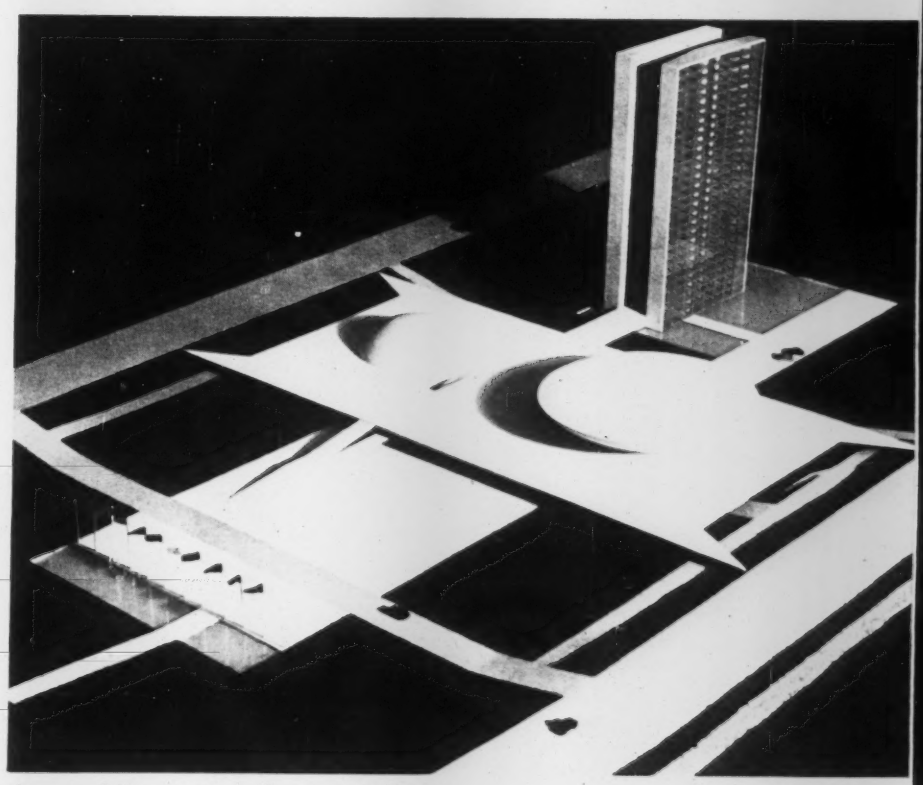
And a U. S. construction company, together with leading Brazilian architects and builders, is helping to make it possible.

Building an entire city would be a giant undertaking anywhere in the world. But in the Brazilian interior it seemed next to impossible.

The original logistics were enough to make seasoned construction men pale. The nearest railroad—a rickety narrow gauge line—was 78 miles from the site; the nearest paved roads, 450 miles; and the nearest air strip more than 120 miles away. Existing roads in the area were just dirt tracks that washed out in the rainy season.

The project is making headway despite these obstacles. Two major modern buildings—a 150-room hotel and the presidential palace are already completed. Others are under construction.

Brasilia will become . . .



the world's most modern capital city.

Grows in the Wilderness

Here's how the job is being done.

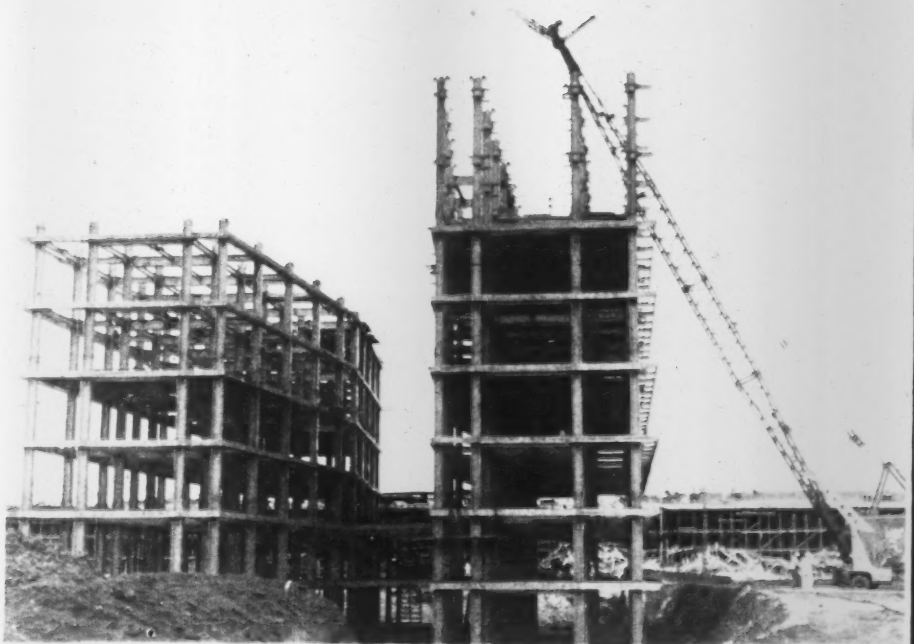
• **Preliminaries**—First, Brazilian contractors carved out a short air strip and built a temporary road to the nearest railhead. Essential supplies and equipment could then be brought to the site. Temporary buildings were set up and surveying began.

Most of the early work on the first four main projects—the presidential palace, the hotel, the 9,850-ft paved airfield and the 78-mile paved highway to the railhead, was carried out by Brazilian companies. However, one U. S. company, Raymond International Inc., was awarded a large contract for a share of Brasilia's construction. The contract includes: foundations and steel erection for 12 government buildings; a dam; and a 27,000-kw hydro-plant.

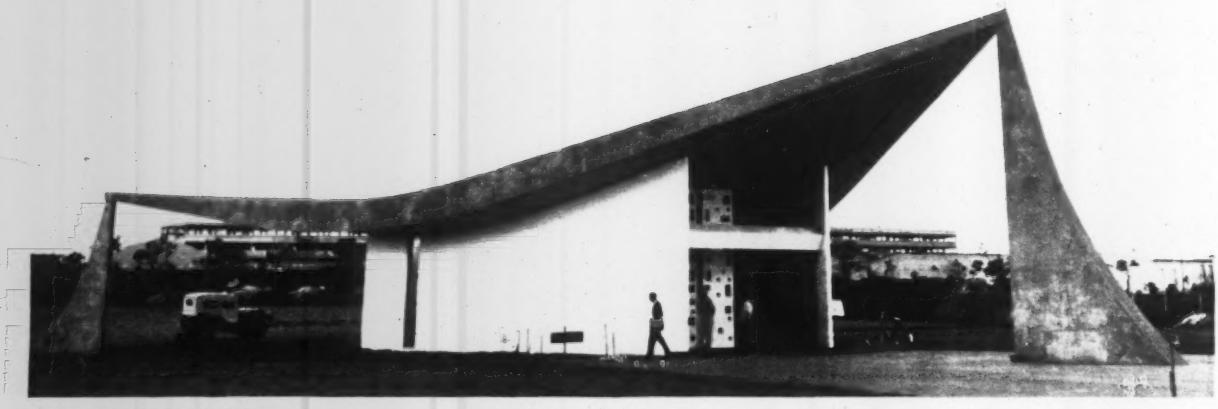
Raymond moved its construction men into a new camp early last year and now has 50 U.S. engineers, supervisors and foremen working at the site.

• **Problems galore**—The builders soon learned that logistics was only one of several major problems on this project.

Because available funds for the city



U. S. CONTRACTOR is building the only steel-frame structures; most buildings will be concrete framed.



BRASILIA'S MODERN DESIGN is typified by this chapel, first permanent building completed.

are limited, contractors have to make do with a minimum of equipment. What would normally be considered "necessary" equipment may be an unattainable luxury at Brasilia.

The Brazilians call this condition "jeito." It has no literal translation, but one U. S. supervisor interprets it as: "Use 10 men with wheelbarrows if you can't get a front-end loader."

At last report no central concrete plant had yet been shipped into the site. For a long time the biggest mixers on the project were half-yard models, and there were not enough of these. This meant concrete pouring had to be tightly scheduled day and night for 10 days or more ahead. Concrete mixers were shuffled from one building site to another and back and forth to the dam site daily.

Even when equipment is available, it often cannot be used properly because suitable complementary machines are missing. This situation was pointed up during the last stages of construction of a diversion tunnel at the dam. Concrete placement was carried out by two half-yard mixers, one located directly over the section to be filled and the other a short distance away. Output of the second mixer was moved by a large crane and bucket—but the bucket could hold 1½ yards while the output of the mixer was only half-a-yard.

All this means extra work and planning. Said one engineer, "I never thought I'd live to see the day when I'd have to worry about a lousy half-yard mixer." And, of course, when materials and equipment have been allotted for the job, poor transportation facilities can delay arrival and thus further contribute to existing shortages.

For example, the structural steel manufactured in the U. S. is shipped in 1,200 ton lots—the equivalent of one government building—to Rio de Janeiro.

How Brasilia Came to Be . . .

Until three years ago Brasilia was just a blanked out area on Brazilian maps marked "Site of the Future Capital." It had been that way for more than 60 years, ever since the first republican constitution of Brazil included provisions for a new capital in the central part of the country, 600 miles northwest of Rio de Janeiro, the present capital.

In 1946 a new constitution reaffirmed the decision to move the capital inland. In 1956 Brazil's president, Juscelino Kubitschek, took action. He decided that if the country's vast, unexploited interior were to be developed, a new capital would have to be established there. He and other leading Brazilians were convinced that Rio was becoming more and more unsuitable. (Rio is the narrowest city in the world. It is wedged between mountains and the sea, with little room left for expansion.)

President Kubitschek instituted a crash program. Brazil's Congress made 1961 the deadline for transfer of the capital to Brasilia.

A government-sponsored corporation called Cia Urbanizadora de Nova Capital—Novacap—was set up to administer the project. Brazilian architect Oscar Niemeyer was retained to design the buildings. And an international panel of experts selected a master urban plan, designed by Lucio Costa, Brazilian architect and planner.

Today Brasilia swarms with thousands of construction personnel.

• **The shape of things**—The city's plan is roughly bird-shaped (see p. 35). The two wings contain the main residential areas; the head and center part contain the commercial and entertainment areas; and the tail, which dominates the city, encompasses the main government buildings. The city's transverse leg is 7½ miles long and the other is five miles long.

An artificial lake, to be formed by the construction of an earth dam, will partly surround Brasilia. The lake will serve as a reservoir and a source of electric power.

The plan also calls for highway, rail and air connections, plus such amenities as golf and yacht clubs.

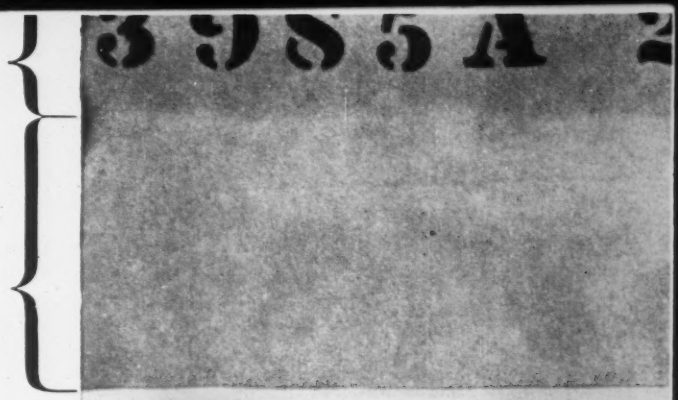
Brasilia is located on a 4,000-sq-mi site and is planned for a 500,000 population. Cost figures for the entire project are not firm; they range from $250 million to $500 million.

The founding of new cities is not without precedent in Brazil. The country has built six such cities during the last sixty years, and they have grown into thriving communities with sound economies. Outstanding of these are Belo Horizonte, founded in 1897, and Goiania, which was built 20 years ago.

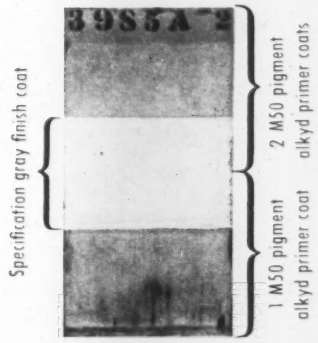
Area shaded from sun by wooden panel holder

After 9 years exposure, fading has barely begun to show in this 3-mil *M50* primer coat. Same type paint made with standard rust inhibiting pigment chalked and showed rusting in less than half this time.

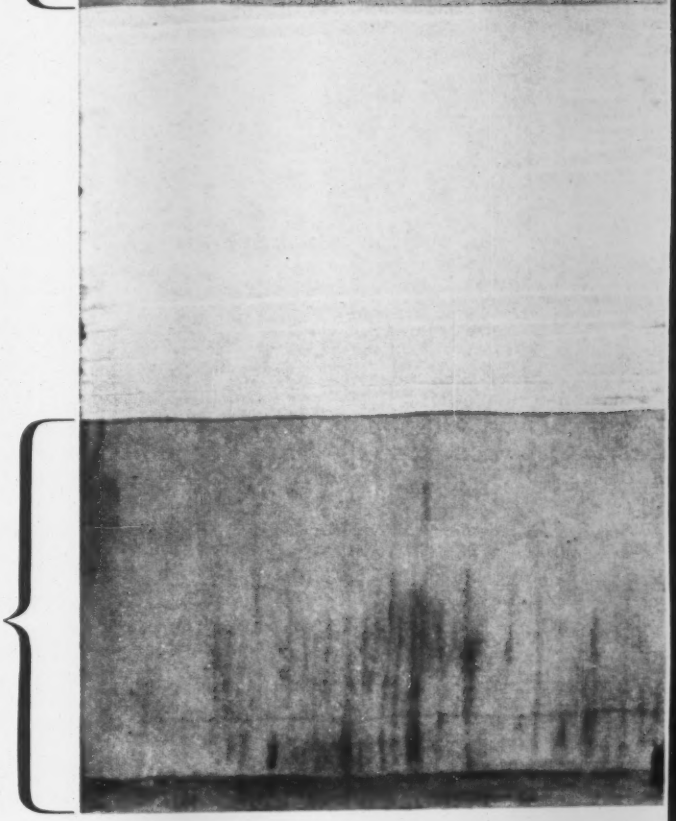
Unshaded area



How test paints shown at right were applied



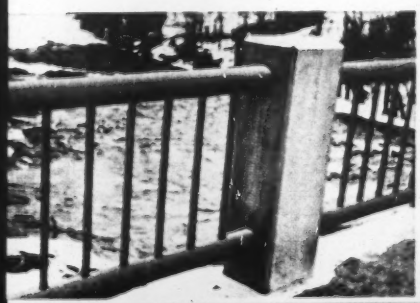
Exposed 9 years 45° S
Each coat 1.5 mils



1.5 mil M50 primer coat is still in place, still actively resisting corrosion after 9 years. Same type paint made with conventional pigment almost completely disappeared in the same period.

Proof M50 pigment Defense in Depth paints deliver lasting weather resistance

Never before such durable metal protection for highway bridges, guard posts, railings, sign posts. And never before such attractive color choices.



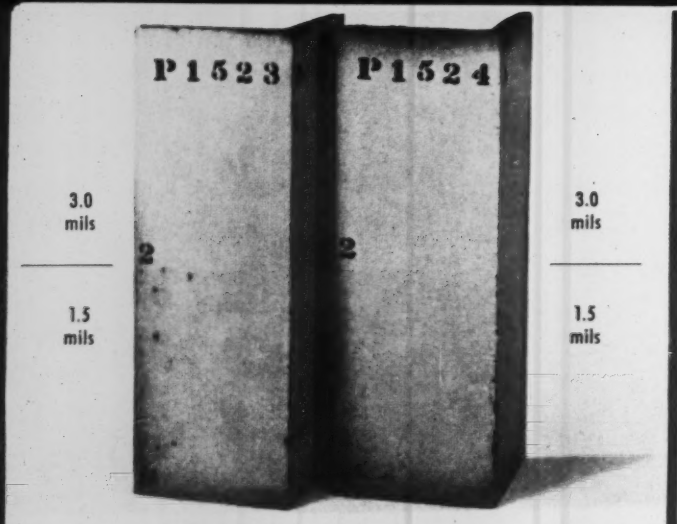
Here you see how typical M50 pigment primer coats weather 9 years exposure. The advantages of weather resistance like this in the primer coat of an anti-corrosive paint system cannot be overstressed. Long after weather has worked its way through intermediate and finish coats, primers made with *M50* basic lead silico-chromate pigment* still provide excellent weather protection. Rust inhibiting action in the film continues unchecked. Even breaks in top coats traceable to damage or painting mishaps do little harm.

The excellent chalk resistance shown by *M50* pigment primers also pays off handsomely. When steel erection is delayed, repreparation of the steel is rarely needed. On-the-job spot priming is sharply reduced.

On the next page, see how typical *M50 finish* paints perform in severe exposure tests.

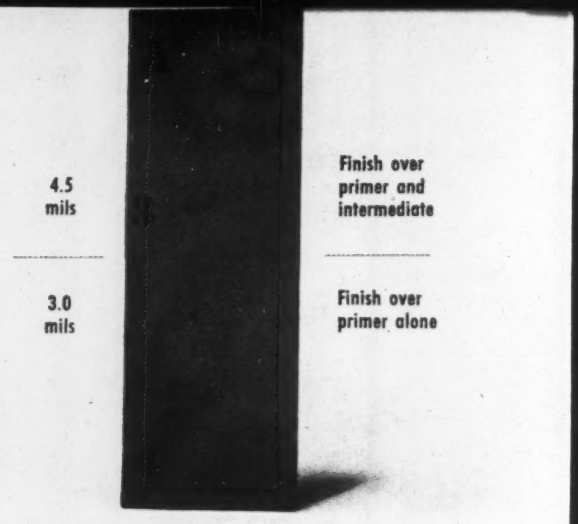
National Lead Company

General Offices: 111 Broadway, New York 6, N. Y.



No visible splotching!

Test angles above show how a typical *M50* pigment finish paint applied directly to steel (no primer or intermediate) withstands 4 years exposure in industrial atmospheres. Left, *M50* pigment finish applied on rusted surface with retained mill scale. Right, same paint applied on clean, sand-blasted surface.



No visible chalking!

This test angle demonstrates the excellent resistance to chalking or fading shown by *M50* pigment Defense in Depth paints. Paint has been exposed 2 years, 45° S in normal atmosphere. The insolubility and stability of *M50* fused lead chromate pigment contributes substantially to this performance.

Here are two performance plusses you can expect from M50 anti-corrosive finish paints exposed to weather

With *M50** pigment Defense in Depth paints, *lasting* weather resistance is obtained in *all* coats . . . not just intermediates and finishes. This is clearly brought out by exposure tests such as the ones shown on this and the preceding page.

Along with lasting 3-deep weather resistance, *M50* pigment anti-corrosive paint systems give you 3-deep rust inhibition and 3-deep color choice. Never before has it been possible to produce specification anti-corrosive paints with comparable performances that could be sold at current market levels.

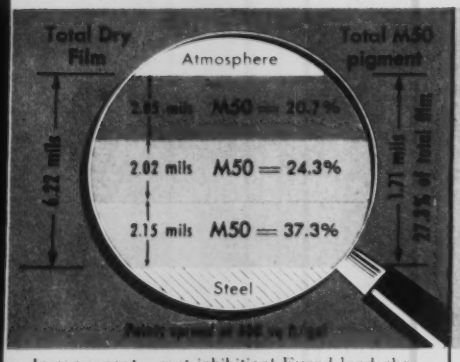
Now, with National Lead's *M50* pigment, most paint makers can make such paints.

National Lead is prepared to help your supplier formulate *M50* pigment paints and also: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

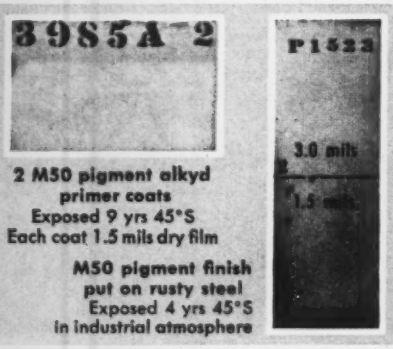
For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts



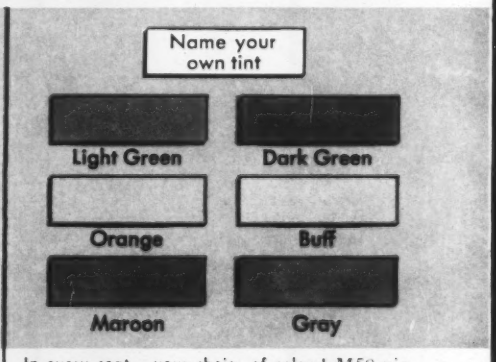
In every coat . . . rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.



2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film

M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S
in industrial atmosphere

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



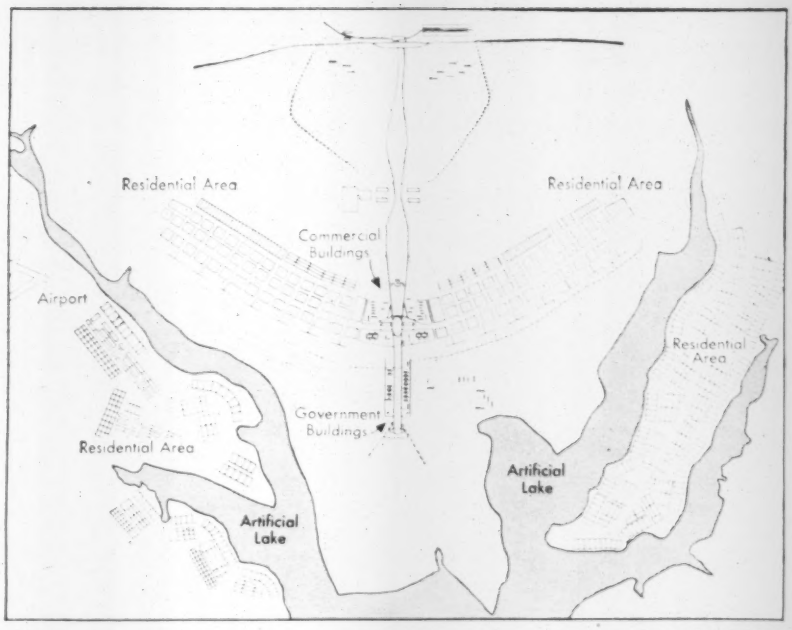
In every coat . . . your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors . . . not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N.Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name _____ Title _____
Firm or Dept _____
Address _____
City _____ State _____



BIRD-SHAPED MASTER PLAN for Brasilia places residential areas in the wings of the city, commercial district in the center, government area in tail.

the nearest port. From there the steel must be transferred to a standard-gage railroad for a 95-mile run to the nearest transfer point. It is then moved on the narrow gage line for 820 miles to the nearest railhead, where the steel is unloaded onto trucks for the final 78-mile trip to the site.

Time taken from U. S. departure point to destination anywhere from 8 to 15 weeks.

• **Labor problems**—An inexperienced labor force compounds construction difficulties. Many of the workers have never before seen modern construction equipment or even heard of a steel frame building.

U. S. personnel had to train local men to become structural steel workers. Basic lessons began on the ground, where as many attachments as possible were riveted to the main steel frames. Each man was also trained to sling steel.

The effort paid off. Now the riveting teams walk along girders, swing up on the crane and rivet steel aloft with ease.

• **Raymond's share**—The buildings being erected by Raymond are the only ones in the new capital to be framed in structural steel. Others in Brasilia and throughout most of Brazil are of reinforced concrete.

The steel frame of Brasilia's tallest structure, the 28-story Congressional Building, will be topped out this month. The building is composed of unusually thin twin towers joined between the 14th and 17th floor and resting on a common foundation. The units are 38 ft wide, by 148 ft long and more than 320 ft high. They are 20 ft apart at their closest point, and 30 ft apart at their outside ends; the interior wall of each tower is "belled."

The other 11 steel framed government buildings are a uniform nine stories high (including a basement above grade). They will provide about 2.1 million sq ft of floor space.

A rock and earthfill dam, 157 ft high and 2,030 ft long, is another phase of Raymond's construction contract. The dam will help to form a 25-mile-long lake around two-thirds of the city. It will provide ample water for the expected 500,000 population and will supply power to operate a 25,000-kw hydroelectric station—also included in the contract.

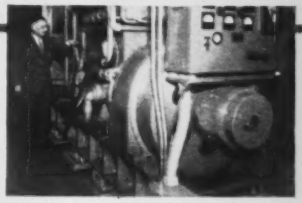
The first stage involves construction of an 11.5 x 11.5-ft (inside diameter) reinforced concrete diversion tunnel, 690 ft long and place of a 110-ft-deep grout curtain. The dam will include a concrete spillway equipped with three tainter gates, 30 ft long by 24 ft high, to control discharge.

For the power supply, a 7½-ft-dia steel penstock will drop the water 490 ft to the three 9,000-kw turbines in the powerhouse. Only two units will be installed initially.

• **Soil conditions**—Since soil conditions at Brasilia were not fully known, Raymond, after studying various alternatives, elected to use concrete caissons.

Three extra-large caisson boring machines mounted on cranes were brought to the site. The boring machines were

'PHONE COMPANY PROTECTS DELICATE APPARATUS FROM ENGINE VIBRATION



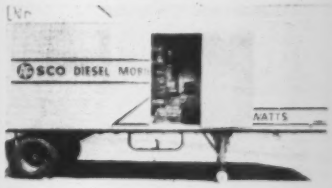
Problem: To shield delicate switching apparatus of General Telephone Co. of Los Angeles from the dangerous vibration of this 300-hp Fairbanks-Morse Diesel-Electric Generator.

Solution: Unique Resilient Mounting by Korfund System engineers. It protects sensitive electronic elements and personnel from vibration, eliminates need for costly foundation.

To get answers to all vibration, shock and noise problems, write for our interesting Booklet 63. To obtain an answer to your *specific* problem, send for a complete Engineering Recommendation free. Just fill in and mail today the coupon on page 9.

THE KORFUND CO., INC.
48-23M 32ND PL., LONG ISLAND CITY 1, N. Y.
IN CANADA: 510 CANAL BANK, VILLE ST. PIERRE, MONTREAL 32, QUEBEC, CANADA

Diesel-Electric Power plant on wheels



300kw power at any standard voltage for operations in remote areas and as stand-by power is now available through a new diesel-electric power plant on wheels. Constructed as a full trailer unit, the plant contains a General Motors 150hp model 8-268A diesel engine and a Westinghouse 300 kw, 375kva electric generator complete with switchgear and radiator. Plants are available for immediate delivery and are ready to operate on arrival.

A. G. SCHOONMAKER Company, Inc.
Foot of Spring Street, Sausalito, California
EDgewater 2-1490
50 Church Street, New York 7, N. Y.
Digby 9-4350

Some of the 69 miles of 24- to 126-inch reinforced concrete pipe needed for the Pittsburgh sewer project

Pittsburgh chooses concrete pipe for sewer system designed to last 100 years!

The 70 communities of the Allegheny County Sanitary Authority have planned 100 years ahead for their new intercepting sewer system. This big project involves 69 miles of sewers—30 miles in tunnels and the rest open trench construction.

Needed strength, durability and watertightness are assured by concrete pipe. Extensive testing proved these qualities. Total infiltration into the first 31 miles completed was less than 3 gallons per minute. In many contract sections infiltration was found to be zero.

Other communities everywhere are also finding that concrete pipe can be designed precisely to solve their sewer problems. And concrete pipe are readily available. For the giant Pittsburgh project, special casting yards—including all test equipment—were set up at convenient close-in locations to speed up schedules, keep costs low.

For helpful information on modern concrete pipelines of all kinds, write for free literature. Distributed only in the United States and Canada.

For the Allegheny County Sanitary Authority: John F. Laboon, Executive Director and Chief Engineer; Lawrence M. Gentleman, Deputy Chief Engineer; Richard J. Dougherty, Construction Engineer.

PORTLAND CEMENT ASSOCIATION
Dept. A4b-17, 33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of concrete

FOR ALL MODERN PIPELINES
concrete

BUILDING MATERIALS come to rest at Brasilia's storage yard after having been transported for hundreds of miles through Brazil's interior.

designed to go as deep as 125 ft. And in many cases this was necessary before soil of suitable bearing capacity was reached.

The cored shafts are 42 inches in diameter and are "belled" out at the base by hand labor before filling with concrete. Sheathing was not required.

In the case of the eleven ministerial buildings, the structural steel was erected directly on a steel base plate attached to the head of the caisson by pre-sunk bolts.

A different procedure was used for the 28-story building. First a 10-ft excavation of the building area was made, and then the caissons were sunk in the normal manner. Next a cage of reinforced steel was laid over the area and over this was laid—in two sections—a 42-in.-thick layer of heavily reinforced concrete. This insured even distribution.

Complicating the foundations was a design calling for elevator motors and hoists to be housed beneath the buildings rather than on top (thereby giving a clean roof line). This specification made it necessary to build very heavy floors and walls of reinforced concrete adjusting the caisson heads accordingly.

• **Other work**—Brazilian builders meanwhile are busy at work on other phases of the giant project.

Next to the 28-floor office building, Cia Construtora Nacional is well started on the Senate and Congress Building. Apartments in a dozen residential squares have been completed or are under construction.

The two major completed buildings are of striking modern design. The Brasilia Palace Hotel is a three-level structure perched on steel columns. It has black tile facing and stretches more than 600 ft from end to end.

The Presidential Palace is a rectangular structure with a green-tint glass facade, partly screened by columns of white Brazilian marble. The columns support a flat, overhanging roof.

In addition to road building within the city, a highway is now being constructed that will connect the city with the nation's existing network of paved roads. The new highway will connect to Belo Horizonte, a focal point for paved roads to several industrial centers. It will be 379 miles long when completed and will replace a 900-mile trail that now zig-zags between the cities. More than 140 miles are already graded and more than 60 miles are stabilized, ready to be surfaced.

India-Kashmir Tunnel Approaches Completion

The Jawahar Tunnel connecting India with Kashmir is more than half completed; the western tube is open to one-way traffic.

The tunnel, under construction for four years (ENR June 7, 1956, p. 94), will reduce the route distance between Srinagar, capital of Kashmir, and Jammu, in the next valley, by 18 miles.

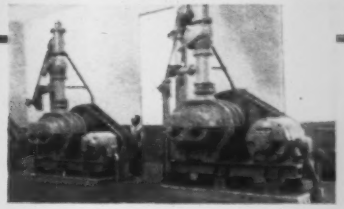
When completed the tunnel will replace the 11,000-ft-high Banihal Pass as India's main link with Kashmir. Heavy snows close the pass to traffic from November to March each year.

It is about 1¼ miles long, built at 7,250 ft above sea level, and has a capacity of 250 vehicles an hour. The tube is 16½ ft wide, 18 ft high, and has a 4-ft pedestrian lane.

The two tubes will be interconnected in four places for emergency purposes. Each tube will have four bypasses for disabled vehicles. Ventilating air will be forced in the direction of traffic.

Cost of the job has not yet been disclosed, but it has been estimated at from $6 million to $8 million.

BLOWER NOISE SILENCED IN RESIDENTIAL AREA



Problem: To prevent the transmission of vibration and structure-borne noise from these three Sutorbilt Blowers at the Sewage Treatment Plant in a residential area of San Jose, Calif.

Solution: Unique Resilient Mounting by Korfund System engineers. It prevents local citizen complaints, provides trouble-free operation, cuts foundation costs substantially.

To get answers to all vibration, shock and noise problems, write for our interesting Booklet 64. To obtain an answer to your *specific* problem, send for a complete Engineering Recommendation free. Just fill in and mail today the coupon on page 9.

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Vacuum tanks form new kind of dam-site skyline at

. . . Hartwell Dam, multipurpose project on

New Way to Cool Aggregates—

A cluster of tall silver-colored tanks overlooking a Savannah River dam site near Hartwell, Ga., marks a significant innovation in concrete dam building. The vessels are major components of the country's first vacuum-type refrigeration plant for aggregates.

The cooling plant has five aggregate tanks—three 86 ft high for coarse material and two 62 ft high for sand. All are 11½ ft in diameter.

In operation the tanks are loaded and sealed, then evacuated of nearly all air. The partial vacuum causes moisture from the rock and sand to flash into vapor. The vaporizing moisture absorbs heat of evaporation from the aggregates, thus chilling them.

Guy F. Atkinson Co., San Francisco, heads the joint-venture group constructing the dam. The company designed and built the cooling plant with conventional pressure tanks, boilers and steam-jet vacuum equipment.

• **Quick chill**—Once the vacuum is applied, pressure in a tank drops quickly to a fraction of an inch of mercury. The actual cooling then takes about 45 minutes. The cooling process may freeze the material in the tanks if the vacuum is not properly controlled.

Vacuum is applied to a tank for about 45 minutes, say on a summer day with the temperature at 80F. Aggregate temperature drops to 40F or lower, in keeping with Corps of Engineers specifications for the job. Maximum temperature permitted for concrete in the forms is 55F.

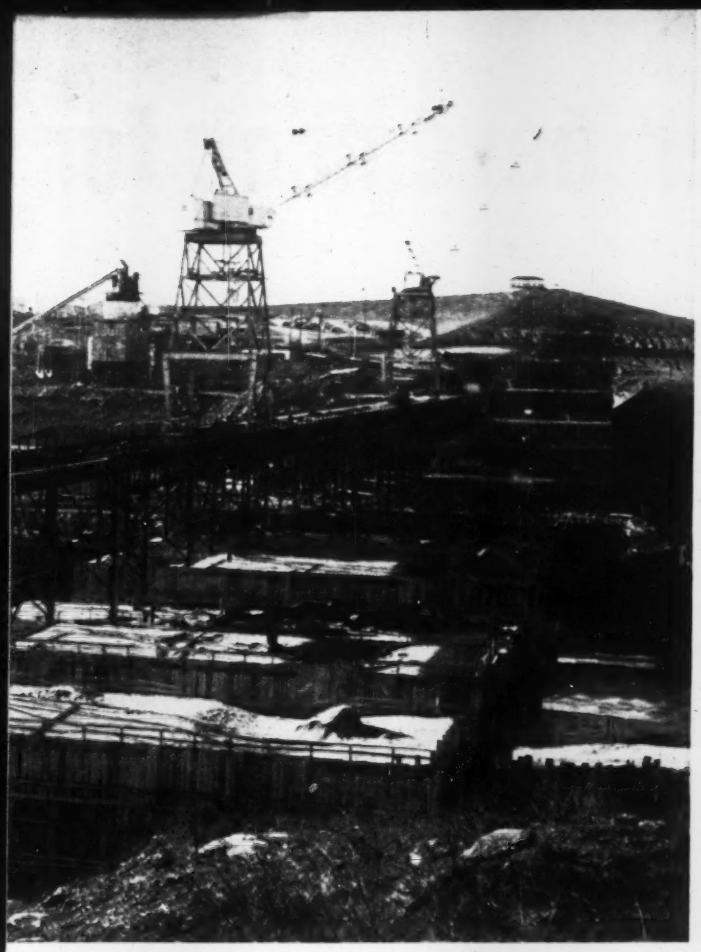
The tanks are baffled inside. In the case of the rock tanks, the baffles serve as a rock ladder. They distribute the coarse material throughout the height of the vessel but protect the walls from a great deal of abrasion and impact. The sand-tank baffles are so arranged as to distribute the sand in hollow cylindrical form, with air space next to the tank walls and up the center of the vessel.

Two boilers fired with natural gas generate steam for the jet-vacuum equipment. They have a combined rated output of 34,000 lb of steam per hour at the operating pressure of 125 psi.

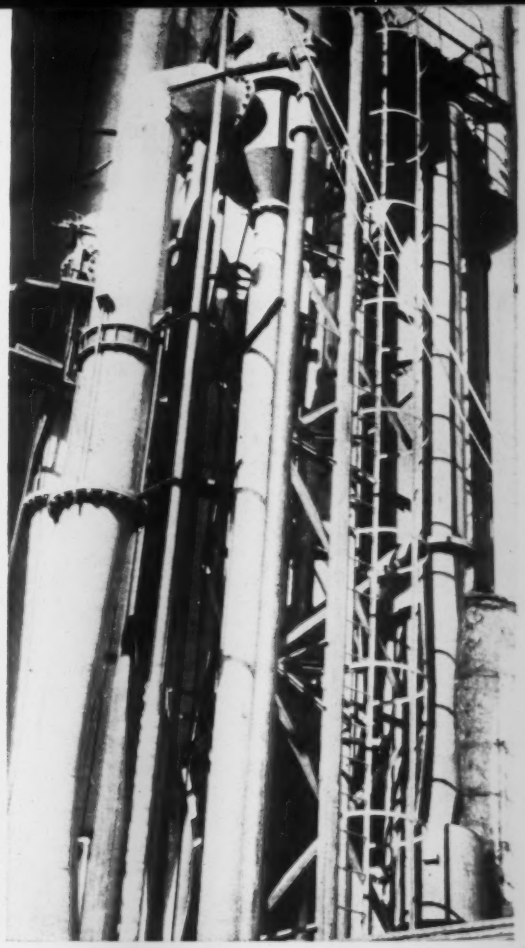
• **It's an old idea**—High vacuum was produced by steam jet ejectors before the turn of the century. The principle is now used widely in industry, not only for refrigeration but also where low pressures are required to aid distillation. Multi-stage apparatus can create almost complete vacuum.

To produce the drop in pressure, steam is jetted at high speed through a venturi tube—a necked-down section of a pipe. This lowers the pressure in the tube (by converting pressure head to velocity head in accordance with Bernoulli's Theorem). Through a lateral connection to the venturi, air can be sucked out of a vessel and entrained with the steam.

• **Vacuum cooling in Iraq**—Although the Hartwell cooling plant might be accurately called the first successful vacuum-cooling plant for aggregates ever built anywhere, the process was



Savannah River. Tall tanks (arrow) are part of



. . . first steam-jet cooler for aggregates.

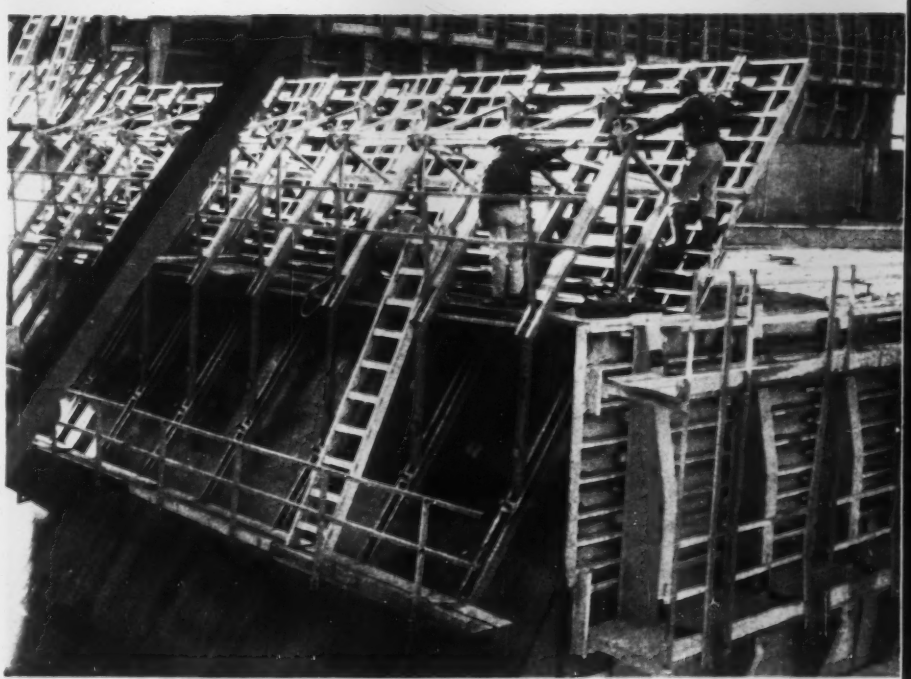
By Steam

used to cool sand on the Derbendi Khan Dam job in Iraq in 1957. It worked fine, but subsoil troubles threatened the foundations of the heavy installation and made it advisable to dismantle it after a few test runs.

The tanks at Hartwell rest on a 76 x 20-ft concrete mat 4 ft thick. And the mat is supported by pipe piles. Empty the rock tanks weigh 46 tons each, the sand tanks 35 tons each. The structure stands 100 ft above the foundation.

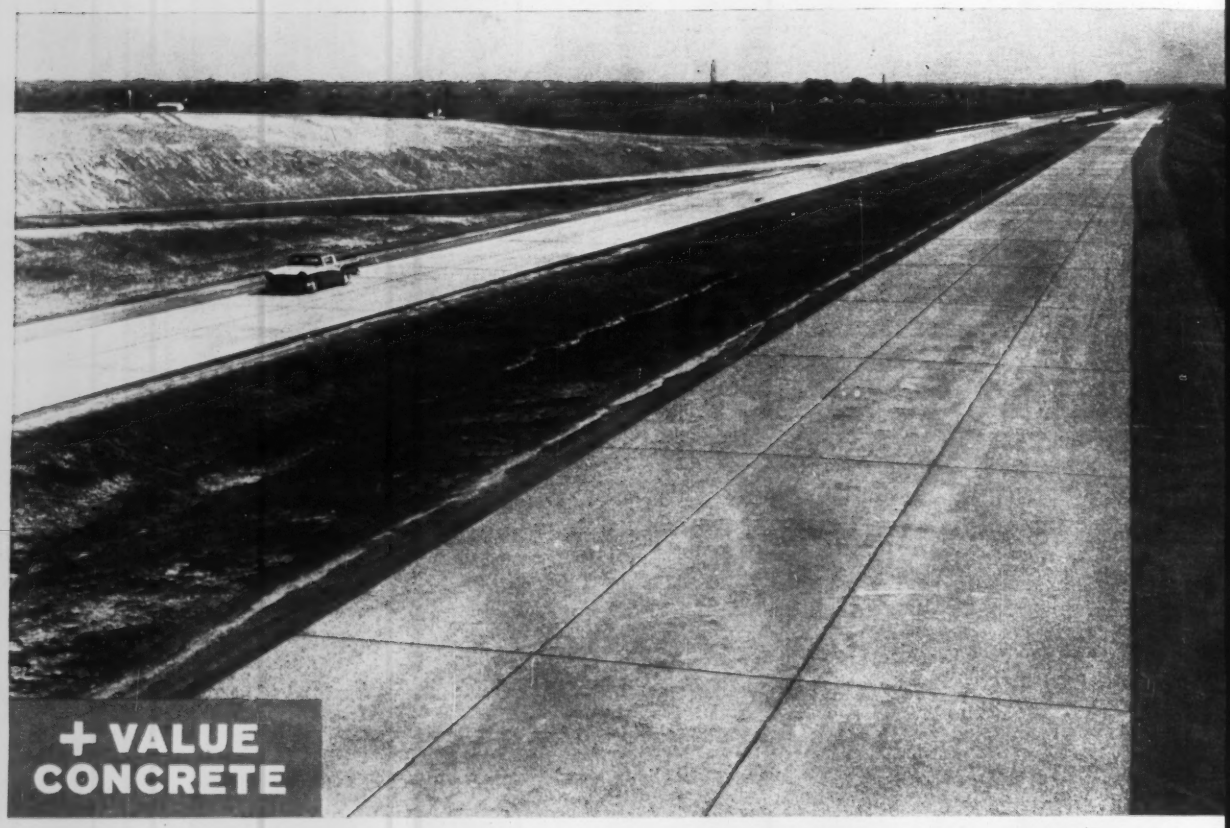
• **Cooling is no bottleneck**—The cooling plant refrigerates coarse aggregate, sand and water fast enough to make possible a concrete-placement rate of 250 cu yd an hour. Cooling-tank capacities are about 200 cu yd each for rock, 80 cu yd for sand. An average cycle through a rock tank takes about 45 minutes, through a sand tank 40 minutes.

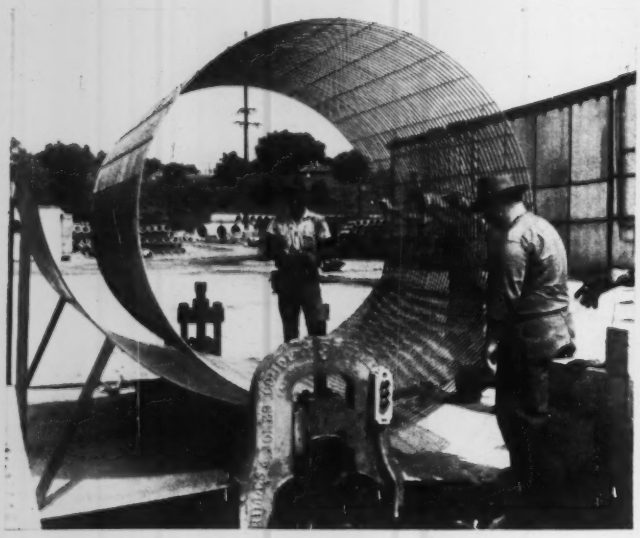
The material is quarried, crushed, classified and stockpiled about 1½ miles from the cooling plant. Trucks haul it

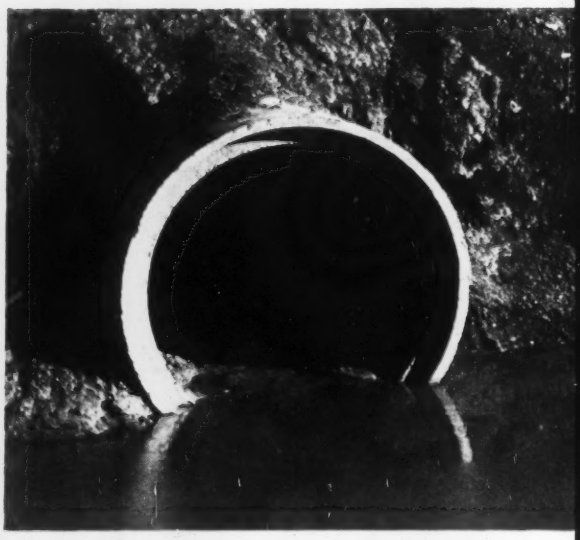


CANTILEVER FORMS hold concrete placed in 7½-ft lifts. Hartwell Dam is among first Corps of Engineers projects concreted in increments this high.

Stronger pavement for

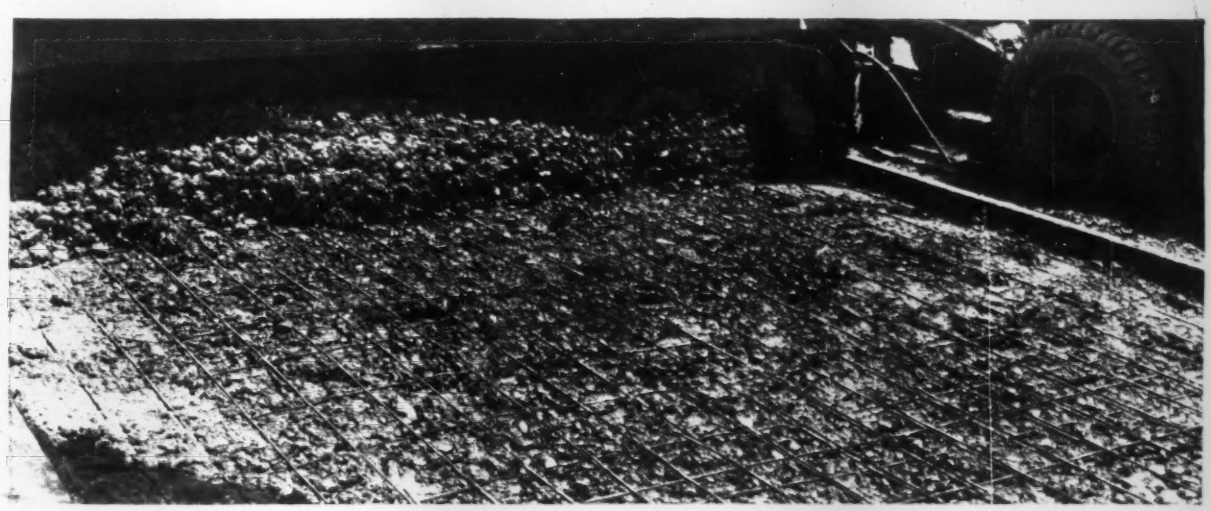






Concrete pipe—reinforced with USS American Welded Wire Fabric—is used throughout the Illinois Tollway. This is permanent pipe, needs no maintenance, and is easy to handle and place. The second illustration here shows the flexibility of USS American Welded Wire Fabric—how easily and completely it conforms to the circular pipe shape.

the Illinois Tollway



USS American Welded Wire Fabric Reinforcement

gives safer, smoother riding surface to 187-mile "short-cut"

The new Illinois Tollway will carry heavy traffic loads in, out and around busy Metropolitan Chicago. It will save time and eliminate traffic bottlenecks on comparatively short trips and will facilitate quick connection with other important highways serving northern Illinois, southern Wisconsin and Indiana.

To protect the $441,000,000 invested in this important highway link, Welded Wire Fabric was used to reinforce the concrete slabs and the concrete pipe. American Steel & Wire supplied the USS American Welded Wire Fabric to assure greater strength, longer life, safer riding surface, freedom from undue maintenance and from unsightly cracks and breaks.

Complete technical information on USS American Welded Wire Fabric is available. Just write to American Steel & Wire, Dept. 911, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

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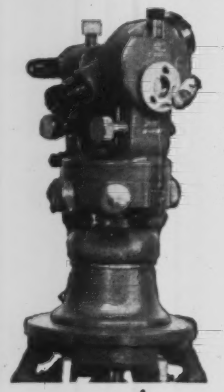

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to the cooling plant. Then conveyors take over. One belt moves it from the truck unloading point to the top of the cooling tanks. Another picks the cooled material up and takes it to the batching plant. There it is rescreened before use.

Mixing water chilled by the vacuum process is pumped to the batching plant after cooling. Cold water is also circulated around the batch-plant bins to prevent cooled materials from warming up. But even without this, cooled aggregates have gone as long as 24 hours in warm weather with only a three or four-degree gain in temperature.

• **Hartwell a good test**—Hartwell Dam ought to constitute a pretty good test of the new aggregate-cooling system. The project requires a total of 900,000 cu yd of concrete. And while some of this has been and will be made in cool weather when artificial cooling is not needed, over half will be made with artificially cooled aggregates.

• **Another notable aspect**—High lifts at Hartwell are worth mentioning in passing. The dam is being concreted in 7½-ft increments of height. This is in keeping with a trend in Corps engineering opinion toward higher lifts. Engineering thinking in the Corps is significant not only because of the large number of Corps jobs affected, but also because of strong influence on private designers.

Some private jobs in the U. S. have been built with higher lifts. Portland General Electric Co.'s North Fork Dam, Clackamas River, was concreted in 10-ft lifts. Canadians have gone even further. Lifts at least as high as 50 ft have been placed north of the border.

• **No. 2 on the Savannah**—Hartwell is the second dam to be constructed under an 11-dam Savannah River development plan okayed by Congress in 1944. It is located 305 miles upstream from the river mouth and 67 miles upstream from the Corps of Engineers' six-year-old Clark Hill Project, first to be built under the 1944 plan.

Hartwell will be operated in conjunction with Clark Hill to reduce flood damage, generate power and regulate flow for navigation below Augusta.

The project comprises a concrete dam, flanking earth embankments, a reservoir and power plant. Total project cost will be $98 million.

• **Credits**—Design and construction is under the supervision of the Savannah District, Corps of Engineers. Colonel R. C. Bahr is district engineer, C. F. Trainor is chief of the engineering division, Fred W. Facey, Jr., is chief of the construction division and Charles A. Jackson, Jr., is resident engineer.

The concrete dam and appurtenant works are being built by Hartwell Dam Contractors, a joint-venture, under a $21.9-million contract. Besides Guy F. Atkinson Co., the sponsor, the group includes Ostrander Construction Co., Portland, Oregon; and Soo Constructors, Winona, Minn. Vernon R. Bradley is project manager for the contractor. This part of the job is scheduled for completion in 1960 or early 1961.

Completed parts of the job are: relocation of U. S. Hwy. 29, J. C. Critcher, contractor, Asheville, N. C.; earth embankments, M. R. Thompson, Montgomery, Ala.; Hwy. 29 bridge, Tidwell Construction Co., Douglasville, Ga.

Bids on the powerhouse will be opened in July, 1960. Harza Engineering Co., Chicago, is now designing this part of the project.

First of the project's four 66,000-kw generators is expected to start up in June, 1962, the last in June, 1963.

Hartwell Dam: Vital Statistics

PURPOSE:

Flood control, power generation, navigation flow control

RESERVOIR:

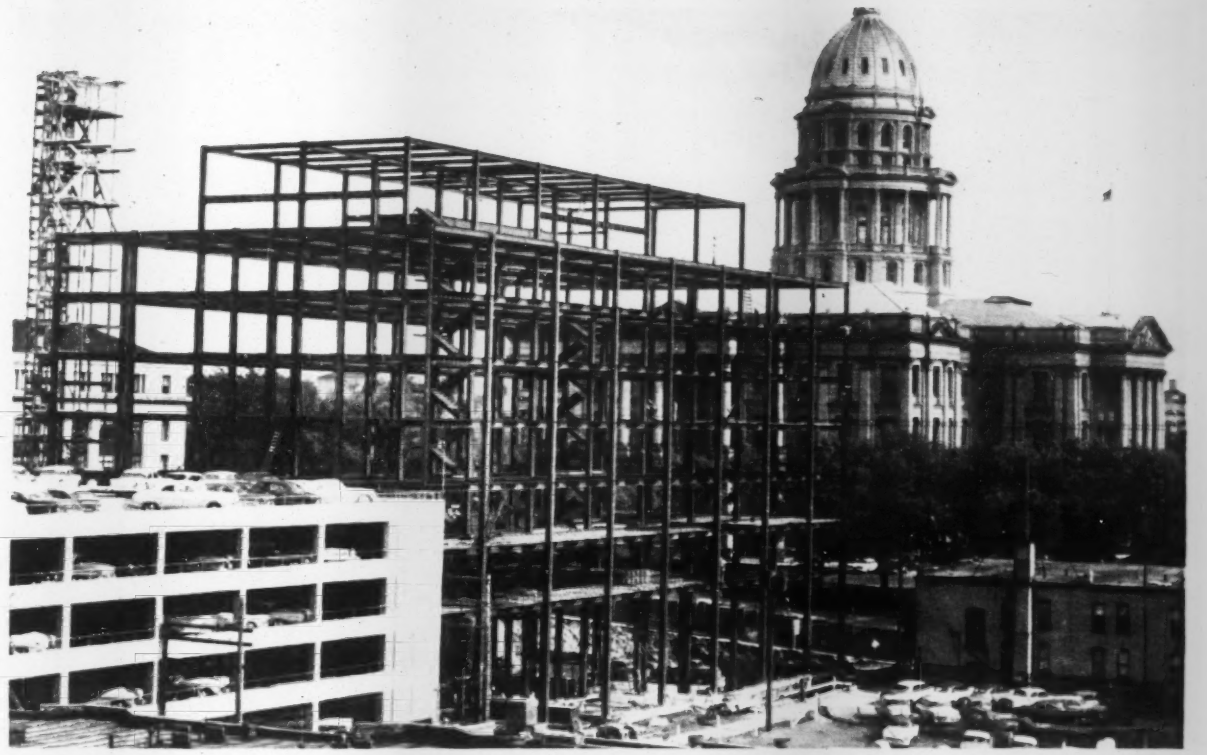
Length Savannah River	7 mi
Length Seneca and Keowee Rivers	38 mi
Length Tugaloo River	42 mi
Shoreline	960 mi
Capacity	2,858,100 acre-ft

POWERHOUSE:

No. of units—initial	4
ultimate	5
Type of turbine	Kaplan
Capacity of each unit	66,000 kw
Total annual output (avg)	453,000,000 kwh

DAM:

Average height concrete section	204 ft
Length concrete section	1,900 ft
Length earth fill S. C. side	6,267 ft
Length earth fill Ga. side	7,089 ft
Spillway length	568 ft
No. of tainter gates	12
Gate size—height	40 ft
width	35 ft
Penstock diameter	24 ft
No. of outlet sluices	2
Sluice size—width	10 ft
height	5 ft 8 in.
Volume of concrete	900,000 cu yd
Volume of earth embankment	4,000,000 cu yd



Savings resulted on this building when the steel erector switched from bolted to welded connections.

Welding Proves a Capital Idea

Merrill F. Yale
District Engineer
The Lincoln Electric Co.
Denver

The frame of Colorado's new State Services Building in Denver was originally designed for erection with high-strength bolts.

Then the steel fabricator and erector, Burkhardt Steel Co., Denver, had an idea. The firm got permission to redesign the joints for field welding.

Result: Substantial savings in labor time and material costs.

The building, seven stories high, plus penthouses, has two more floors below ground. Over-all plan dimensions are 94 x 196 ft. It's directly across the street from the Colorado State Capitol and will provide additional office space to supplement that in the Capitol and annex buildings.

A typical wind connection in the original design called for 22 bolts; each one cost about 48 cents and required at least two drilled holes for assembly. The connection had a stiffened seat fabricated in the shop and a T-section cover plate that was bolted to both the column and the beam.

The new welded connection required only six field welds, all made in the downhand position, and the seat was a simple T half-section of a wide-flange beam shop-welded to the column.

Erecting a typical wind connection began by placing the beam on the seat and fastening it with temporary erection bolts. Welding followed a predetermined sequence.

The first welds (either ¼ or ⅜-in., depending on the beam size) joined the beam to the seat. Operators used E-6024 iron powder electrodes here.

After welding the beam to the seat, the operator put the small cover plate on the beam top, centered it and butted the beveled edge against the column. Then he welded the connection in this order: (1) fillet weld on the edge opposite the column; (2) fillet welds along both sides of the plate; and (3) butt weld between beveled edge of cover plate and column.

For the third step, welders used E-6010 electrodes in the first two passes to assure good penetration and fusion in the root of the joint. Then they filled the joint and built up a fillet with E-6027 electrodes.

All welds for this connection were made in the downhand position; work was fast, easy and required less skill to produce sound welds of reliable quality than with vertical or overhead welding.

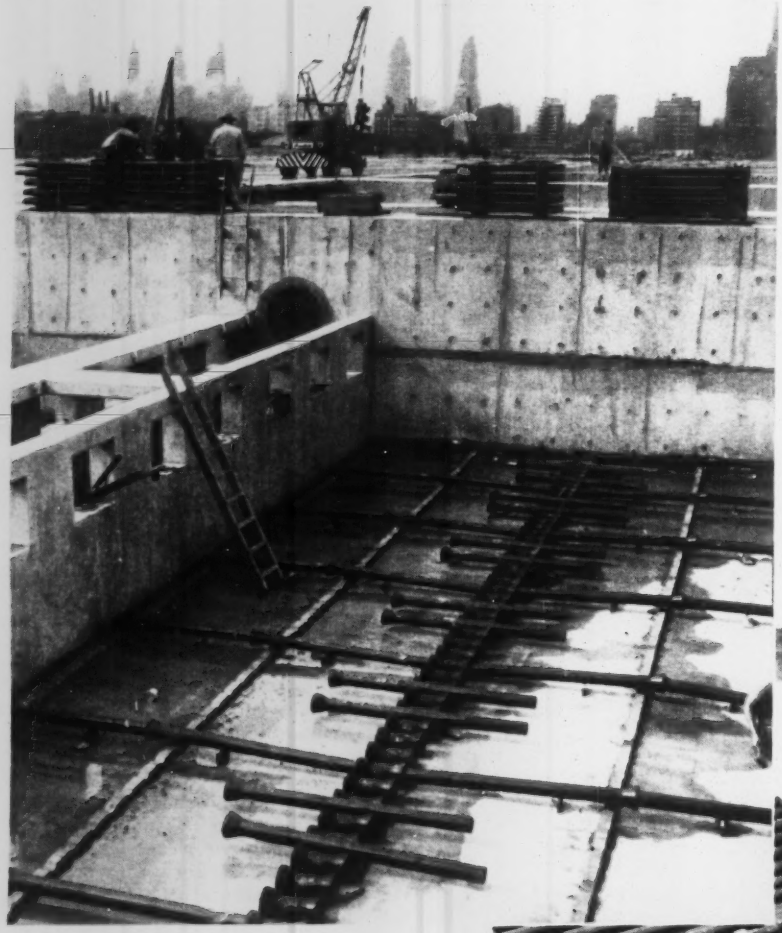
Some column butt joints were originally designed for field bolting, too. Cover plates, bolted to both flanges, took 32 bolts in a typical joint. Again, this would have meant drilling plus the usual difficulties of getting proper alignment between the bolt holes on columns and cover plates. Column-size changes would require shimming flange splice plates, too.

The welded design called for beveled edges, welded from one side only. The chamfers (beveled at 45 deg with ¼ in. of square edge remaining) were on the outside of the top column flanges. Beveling meant little additional work because the original specifications called for milled column ends anyway.

Operators made the joints in the horizontal position — comparatively easy welding; the lower column, being larger than the upper one, provided a shelf. Welding in this position was nearly as easy as downhand welding, and E-6010 electrodes, with a fast-freezing deposit, reduced the tendency to spill.

(Story continued p. 46)

CLOW

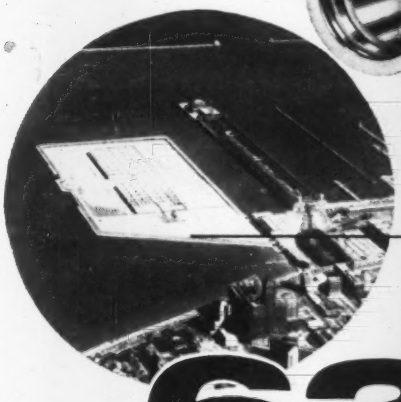


Start of installation of Clow cast iron pipe with intermediate Bell-Tite joints in one of 192 half filter beds which compose the filter underdrain system. The Bell-Tite flare tees are first set in concrete. Note Chicago skyline in distance.

Installation of pipe and tees partially completed. Clow Bell-Tite joints permit easy and rapid assembly—an important factor especially in a job of this magnitude. Bell-Tite forms a pressure-tight joint instantly. Photo shows Neil Sullivan, pipe foreman for George D. Hardin, contractor (right), and Lewis C. Alk, Manager, Clow Technical Service Department.

CAST IRON

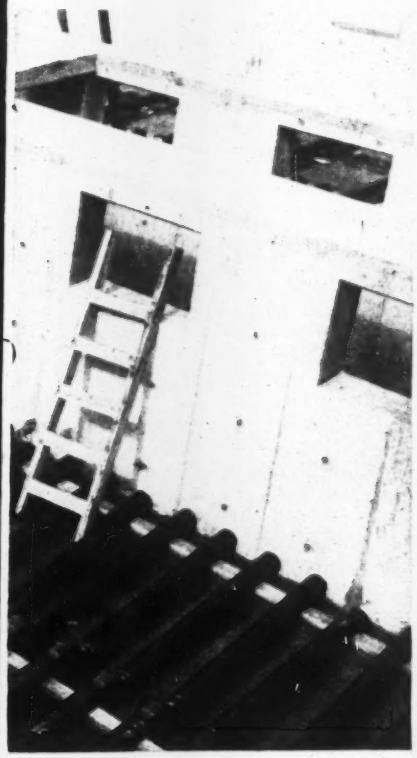
PIPE



In Chicago's huge filtration plant–

62 MILES OF CLOW CAST IRON PIPE

in filter underdrain system



Chicago's new Central District Filtration Plant, now under construction, will be the largest in the world. Located on a 61-acre tract of filled-in land on Chicago's lake front, it will have a normal capacity of 960 million gallons of water a day—a maximum capacity of 1680 million gallons a day. The plant was designed by Department of Public Works, City of Chicago, Bureau of Engineering, Filtration Design Division.

Over 62 miles of Clow 4" cast iron pipe—27,264 runs of pipe with 13,632 Bell-Tite® and flare tees compose the underdrain system for 192 half filter beds. Each pipe length is supplied with perforated holes with brass eyelets and has a cast iron plate welded in one end. Each Bell-Tite tee has two eyelet holes.

Easy, rapid assembly permitted by the Clow Bell-Tite joint contributes greatly to economical installation.

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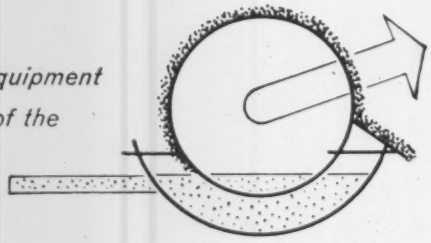
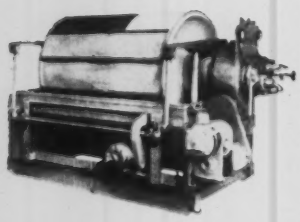


Pick any processed material, from alcohols to zirconium, and it's dollars to doughnuts that somewhere along the production line there's a filter.

Keeping on top of the many demands made on filtration equipment by modern processing often presents some tricky problems. Take corrosive applications, for instance. With rotary drum type filters, usual practice calls for stainless steel or rubber-covered construction. Capitalizing on advances in materials of construction, our engineers recently developed a filter with all essential components fabricated from tough, glass-reinforced plastics. The plastic construction not only resists corrosion, but it is also lighter and lower in cost than comparable standard machines.



This new filter has been successfully tested in handling acid leach solutions in a uranium mill and is now offered as a regular component of the Dorr-Oliver line.

This development is quoted as another example of the many contributions made by Dorr-Oliver to increase the scope and versatility of filtration equipment. Actually, it's just about impossible to think of any type of filter for any industry that isn't made by Dorr-Oliver and that hasn't been developed or improved by Dorr-Oliver engineers.

We're glad to be able to offer this wide experience and technical knowledge to help you in the solution of any filtration problems. Dorr-Oliver Incorporated, Stamford, Conn.

In the unit operation of filtration, Dorr-Oliver makes:

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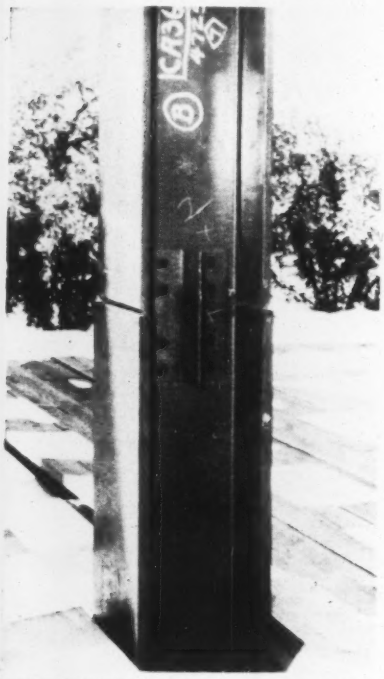
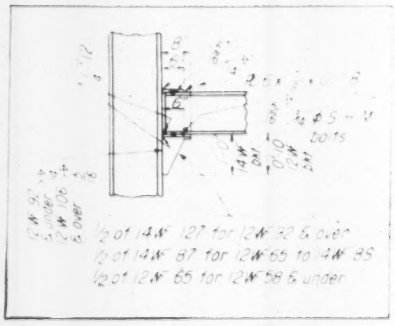
. . . Welded Denver frame



WELDERS SPLICE columns on the outside only. Bolted T-plate is temporary.



SIMPLE SEAT and coverplate form typical wind connection with only six welds.

The steel job was finished 12 days ahead of schedule, ample evidence of the time saved with welded erection. Burkhardt Steel was pleased with the simplicity and ease of construction, as well.

Burkhardt claims a reduction of 19.3% in shop labor cost and a 2.5% saving in steel. Original steel subcontract for the 1,300-ton frame was $383,700.

After all the steel was in place, a check showed that columns were plumb within ¾ in. for the entire building height of 130 ft.

G. Meredith Musick & Temple H. Buell are the architects-engineers for the $3.3-million project. Mead & Mount Construction Co. is the general contractor.

SETTING INITIAL 2 SPANS for one of the highway bridges serving Air Force Academy, Colorado Springs. Skidmore, Owings & Merrill, Chicago, architects; A. S. Horner Construction Co., Denver, contractor. L. Boduroff, Denver, consultant for prestressing, trusses, gantries.

120′ girders site-cast in line and rolled into place

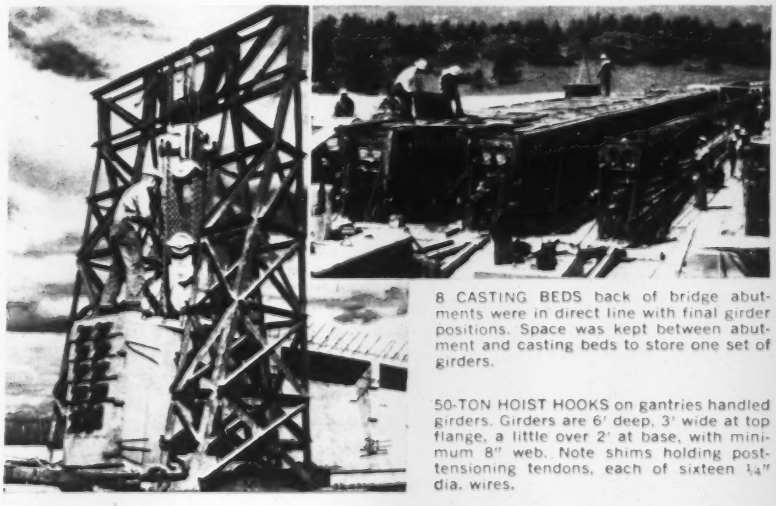
Gantries on temporary trusses handle placement atop 70′ piers

PIER HEIGHTS, on this six-bridge project for the new Air Force Academy at Colorado Springs, ranged up to 70′. That's a tough crane lift to erect big prestressed concrete girders weighing 96½ tons, especially from rough ground.

Instead, the contractor crane-hoisted light temporary trusses, cast the girders in direct line with their final position, and then rolled them into place with 2 gantries riding the trusses. 128 girders were thus placed, 112 of them being 120′ x 6′.

Girders for each bridge were cast behind one of its abutments. When girders reached 4,500 psi cylinder strength, they were prestressed to 700 tons, then moved straight ahead to storage. When girders for 2 spans were completed, the gantries placed them a line at a time, moving the trusses for each line. After concreting the decks, trusses were extended from the second pier and up to 3 additional spans completed the same way.

The ready mixed concrete designed for the girders gave 4% air entrainment, 2″ average slump and a 7-day strength of 6,345 psi. Proper processing and uniformity of the batches delivered to each of the 6 bridge sites were assured by truck mixers of certified design, capacity, mixing speed and water control accuracy.



8 CASTING BEDS back of bridge abutments were in direct line with final girder positions. Space was kept between abutment and casting beds to store one set of girders.

50-TON HOIST HOOKS on gantries handled girders. Girders are 6′ deep, 3′ wide at top flange, a little over 2′ at base, with minimum 8″ web. Note shims holding post-tensioning tendons, each of sixteen ¼″ dia. wires.

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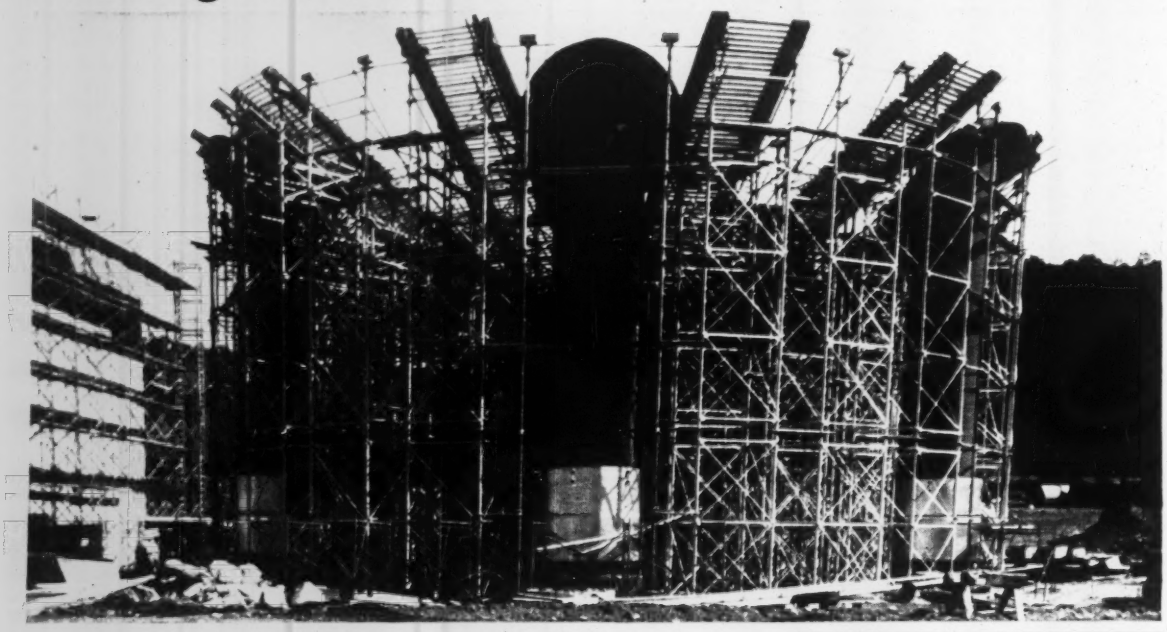
Shoring Methods . . . by Patent Scaffolding Co.



Extreme Load Bearing Problem Solved With PS Co. Shoring

at Yankee Atomic Electric

JOB LOCATION—New 134,000 kilowatt atomic energy producing electric power plant for Yankee Atomic Electric Company, Rowe, Mass. Cost estimated at $50,000,000. Scheduled for completion in late 1960. Now in construction. See artist's sketch of finished plant.

ENGINEERS AND DESIGNERS—Stone & Webster Engineering Corporation and Westinghouse Electric Corporation.

CONSTRUCTORS—Stone & Webster Engineering Corporation.

PROBLEM—What type of shoring to use to support at considerable height above grade a superstructure forming the base and shield around atomic reactor section of the plant see elevation view diagram.

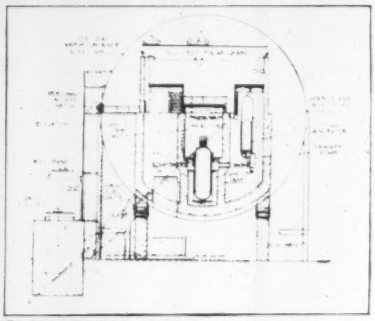
Factors to be considered were these: 1 — The outer concrete shield for the reactor section, measuring 82'6" in diameter, consists of a conical shaped bottom slab averaging 5' thick; 2 This slab is in turn supported by the circular inner and outer walls above the slab. These walls are 5' wide by an average height of 16' above the slab; 3 The massive circular walls are to be poured monolithically with the slab, since they act as beams which, after developing sufficient strength, support the conical slab between the columns.

SOLUTION—PS Co., working closely with Stone and Webster, devised the load bearing engineering factors to be met by the shoring equipment. These included —shoring must be erected to 30'-high at the low point and 50'-high at the high point. Shoring must be spaced to carry a maximum load of 21-tons on each leg under the ring walls, 15-tons on each leg under the conical base.

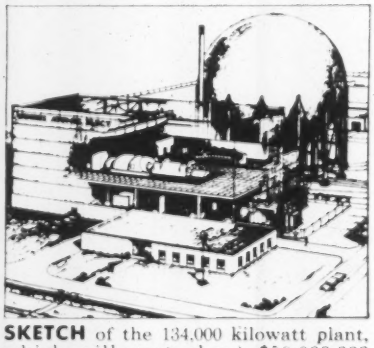
From the many types of PS Co. equipment available, "Extra Heavy Duty Shoring" components are specified by both companies' engineers as the correct supporting medium for the job. The load bearing capacity of this equipment meets the requirements. An engineering layout, supplied by PS Co., provides exact detailed plans for correct placement of shoring legs and erection of the equipment. The photo shows how the Shoring is erected, ready for the forming lumber. Exact height adjustment is achieved by the use of 25-ton capacity screw jacks.

As proved on this unusually heavy supporting problem—there is a type of PS Co. Shoring equipment available to do practically any kind of shoring, regardless of the size or weight of the job.

NOTE—Additional PS Co. equipment to be used is 2,000 frames of "Trouble Saver" 5'-wide Sectional Steel Scaffolding to provide platforms for exterior work around the periphery of the vapor shield and "Trouble Saver" 2'-wide Ladder Scaffolds to support heavy concrete beams of other structures.



ELEVATION VIEW showing the concrete area which is being supported by the "Trouble Saver"® Shoring.



SKETCH of the 134,000 kilowatt plant, which will cost about $50,000,000 scheduled for late 1960 operation.

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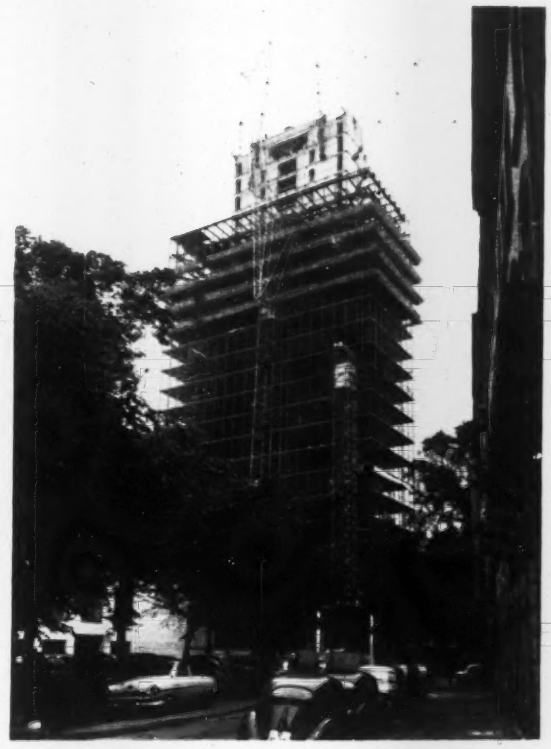
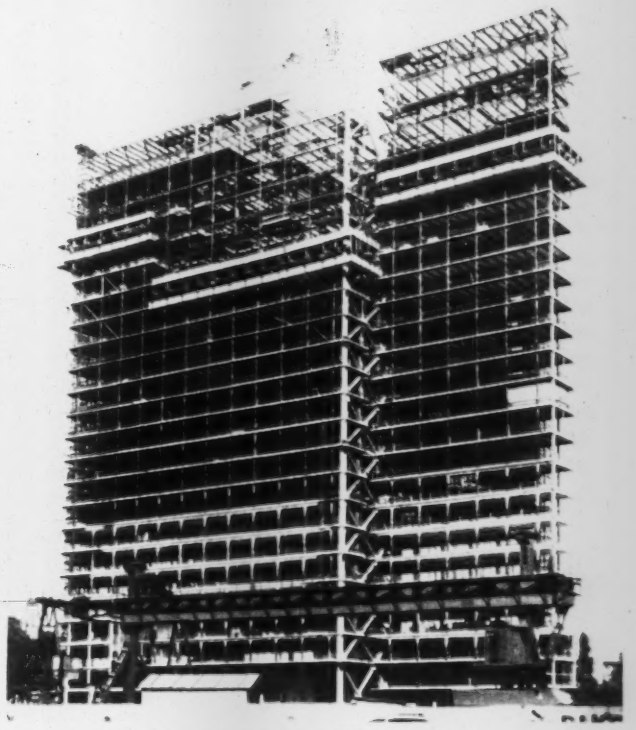


One builder works around a concrete core



. . . another relies on steel bracing

Two Approaches to Similar Jobs

Two buildings, going up in Dusseldorf on the Rhine River, have the same type of tubular steel columns for vertical loading. But engineers handled transverse loading on the projects differently.

The frame of the 24-story headquarters for Mannesmann A. G. transmits all lateral loads to a reinforced concrete core. All girder connections to columns are hinged, eliminating dead-load bending and torsional moment on the tubular columns. The 290-ft-high building contains 142,000 sq ft of space and will cost $2.6 million.

The 25-story building for Phoenix Rheinrohr A. G., relies on X-bracing to transmit lateral loads from the building to the ground. Designers decided to abandon the idea of a central reinforced concrete core and use instead a welded steel structure. The frame is braced by four vertical systems, two transverse and two running the length of the building. Despite the extensive bracing, the frame has only 2,400 tons of steel.

The Phoenix building, 311 ft high, will cost $7.5 million and provide 360,400 sq ft of office space.

On the Mannesmann job, the main hoisting was done with a 322-ft-high crane. Maximum crane load was 1¼ tons. Engineers added crane jibs at the 22nd-floor level to speed material handling. Construction sequence was core first, complete to the top, then the steel building frame around it.

Builders of the Phoenix headquarters installed a rail-mounted crane to handle the entire project. At its maximum height, the boom clears the building and serves both sides from end to end.

Both buildings are completely air conditioned. Each is equipped with four high-speed elevators.

Tubular steel columns in the Phoenix building vary from 16½ in. in diameter, with a wall thickness of 1¼ in. at ground level, to 7½ in. in diameter with ¾-in. walls at the roof. In the Mannesmann building, 14 tubular steel columns, 18 in. in diameter, support the steel frame at ground level on the perimeter of the building. These rise 24 ft to the second level. Perimeter columns extend from this floor to the roof.

Phoenix building contractors are Wayss & Freytag of Frankfurt and August Klocnne of Dortmund. Architects are Helmut Hentrich and Hubert Petschnigg. Consultant Wintergerst of Esslinggen is the structural engineer.

Paul Schneider-Esleben and Herbert Knothe are architects of the Mannesmann project. Mannesmann-Bau A. G. is the builder. Drs. Leonard & Leventon are engineers for construction.

Toronto Rail Congestion To Be Reduced by Bypass

Canadian National Railways will build a 32-mile, $80-million bypass around the northern part of Toronto.

Cost of the project will include the purchase of 1,185 acres of land that will become the main marshaling yards for the railway in southern Ontario. The yards are now downtown.

The bypass is designed to relieve railway congestion in Toronto and open up industrial, commercial and residential expansion in the area.

The new route will be double-tracked, 100 ft. wide and have separated grades. It will run from Pickering, in the east, to Malton, in the west.

(*International continued p. 51*)

How to Install Rock Bolts

These are the four easy steps when you install the Bethlehem wedge-type rock bolt. The 1-in. diam slotted bolt locks itself into the rock formation, anchoring the rock layers so tightly that it is virtually impossible for serious rock slides to endanger traffic.

In addition to the wedge-type bolt, Bethlehem also makes a $^{3}/_{4}$-in. diam headed bolt, used with an expansion shell. Both bolts are easy to install, and provide positive locking action.

If you would like to know more about the use of Bethlehem rock bolts in minimizing danger from rock slides, our engineering staff is at your service. Just drop a line to the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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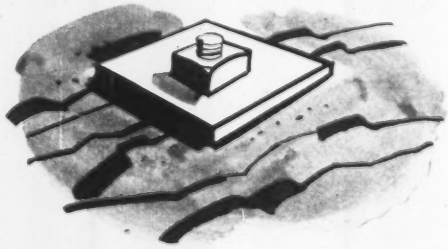
BETHLEHEM STEEL

BETHLEHEM STEEL

1 Wedge is inserted in slotted end of rock bolt. The $1^{1}/_{4}$-in. hole has been drilled previously, to depth 3 in. less than length of bolt.

2 Bolt is inserted through opening in steel anchor plate (rock anchor tie and plate may be used instead), then placed in the hole.

3 Bolt can be driven by same equipment used in boring hole. Dolly protects threads. Wedge drives deep into bolt, spreading slotted portion. Impact wrench is used in tightening nut.



4 With the nut drawn up tightly, the steel anchor plate bears against the rock surface, providing additional support.

Vienna Building Blanket . . .

. . . Keeps Men Busy All Winter

Vienna's city government is fighting winter unemployment and pushing municipal work at the same time with a reed blanket. Seven housing projects are involved in the program.

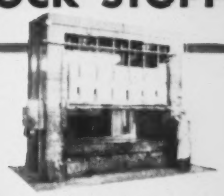
Housing-project builders place a lightweight steel frame over the foundation of a house, then cover it with bitumen-coated panels made from reeds (arrow, top). As brick work progresses inside the enclosure, all openings are blocked off; hot-air blowers maintain inside temperatures at 40-45F during the coldest winter periods. Jacks elevate the enclosure as masonry work goes up floor by floor.

Direct cost of the structure is between 4% and 5% of the building cost. Vienna officials feel it's well worth the money. It has kept unemployment compensation down and has brought a 50% reduction in the construction workers' sick list.

Considering these side effects, officials estimate the cost of the reed-blanket enclosure drops to only 1½% of the cost of each building.

(*International continued p. 54*)

PUNCH PRESS SHOCK STOPPED



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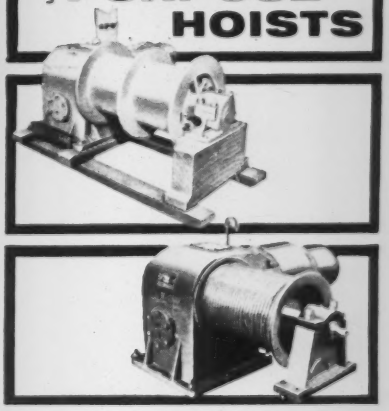

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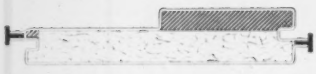

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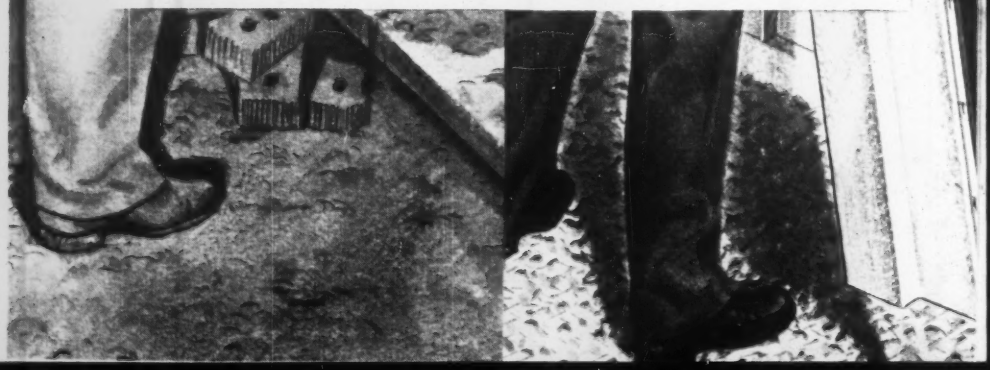

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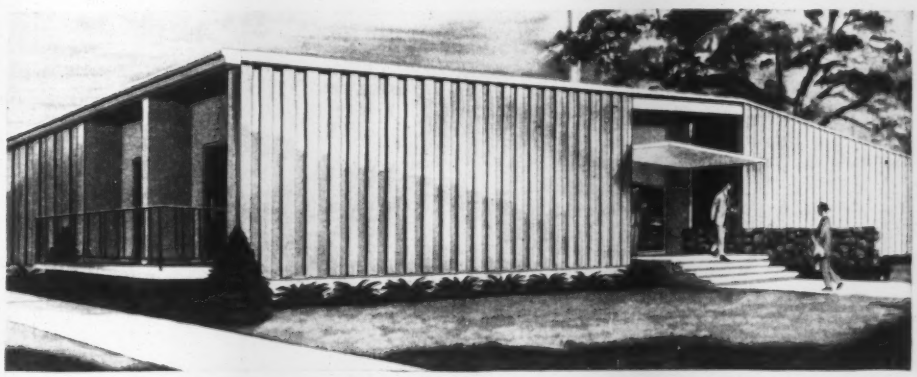
Call your Butler Builder for full details – ask him about Butler financing, too. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct to us.



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International Heliport Is Planned for London

Rotorports Ltd., London, is planning to build an international heliport on the Thames River near central London.

If plans are approved by municipal authorities, the new heliport will be a concrete platform extending over the river. The overhanging section will be stressed for landing impact. The part of the platform on the river bank will be used for parking helicopters.

Administration and terminal buildings will be constructed beneath the platform. A restaurant and control tower will be on top.

Initially, the heliport's traffic will be mainly charter helicopters. British European Airways and Belgium's Sabena airline are reported to be interested in using the ports for scheduled service.

The heliport can be in operation within a year if Rotorports gets permission to begin construction. The company plans to build a chain of heliports throughout Great Britain.

British Columbia Plans $1-Billion Roads Program

British Columbia is planning a ten-year, $1-billion highway construction program that, on the basis of traffic and population, is supposed to give it the best highway system in North America.

The program will run from 1960 to 1970. The $1 billion does not include possible contributions from the federal government. Within the past year the province spent $65 million on roads.

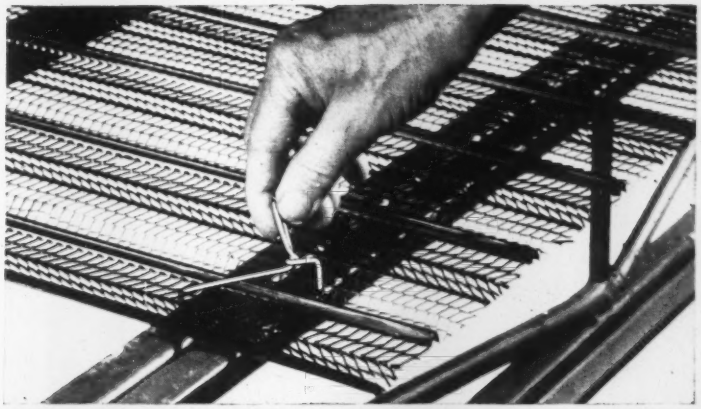
The Province of Alberta will spend more than $72 million on highways and district roads during the coming year. This will be about $10 million more than was spent in 1958-1959. The 1959-1960 expenditure will include an appropriation of $3 million for the Trans-Canada Highway.

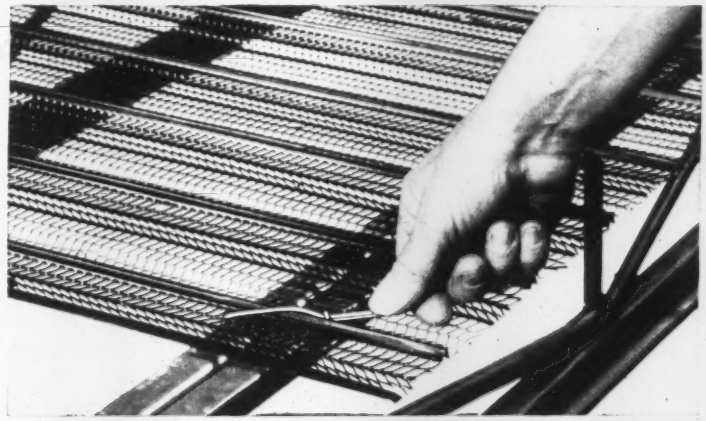
Asian Projects Financed By U. S. Crop Surpluses

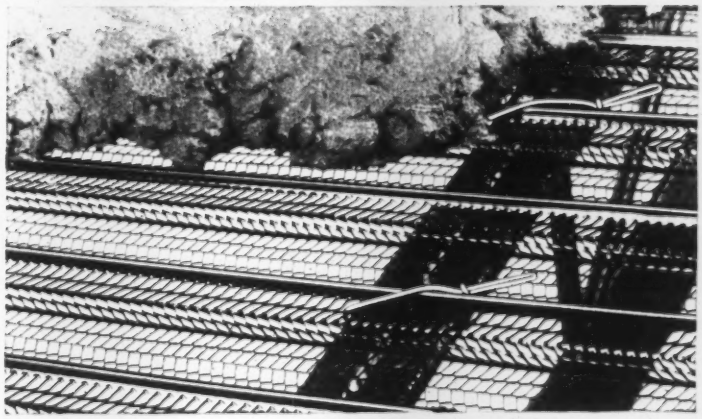
Sale of surplus U.S. crops in India and Indonesia will finance construction projects in those countries.

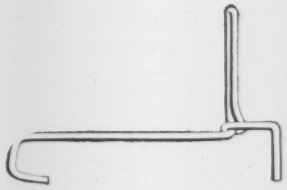
The U.S. will make 40-year loans totaling $200 million in local currencies, obtained in surplus crop sales over the past several years, for 14 river valley projects in India. Irrigation, flood control and power generation will be included in a program to cost $212 million over the next two years.

A similar arrangement in Indonesia will total $71 million in loans for projects including electrical and highway construction.









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Gold Bond's Metal Lath Centering Clip, used with Gold Bond ⅜" Rib Lath for centering, makes a fast, economical system for pouring concrete slabs. Here's how it works:

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Middle: Press down clip with thumb to lock rib lath firmly to joist.

Bottom: Pour concrete on lath.

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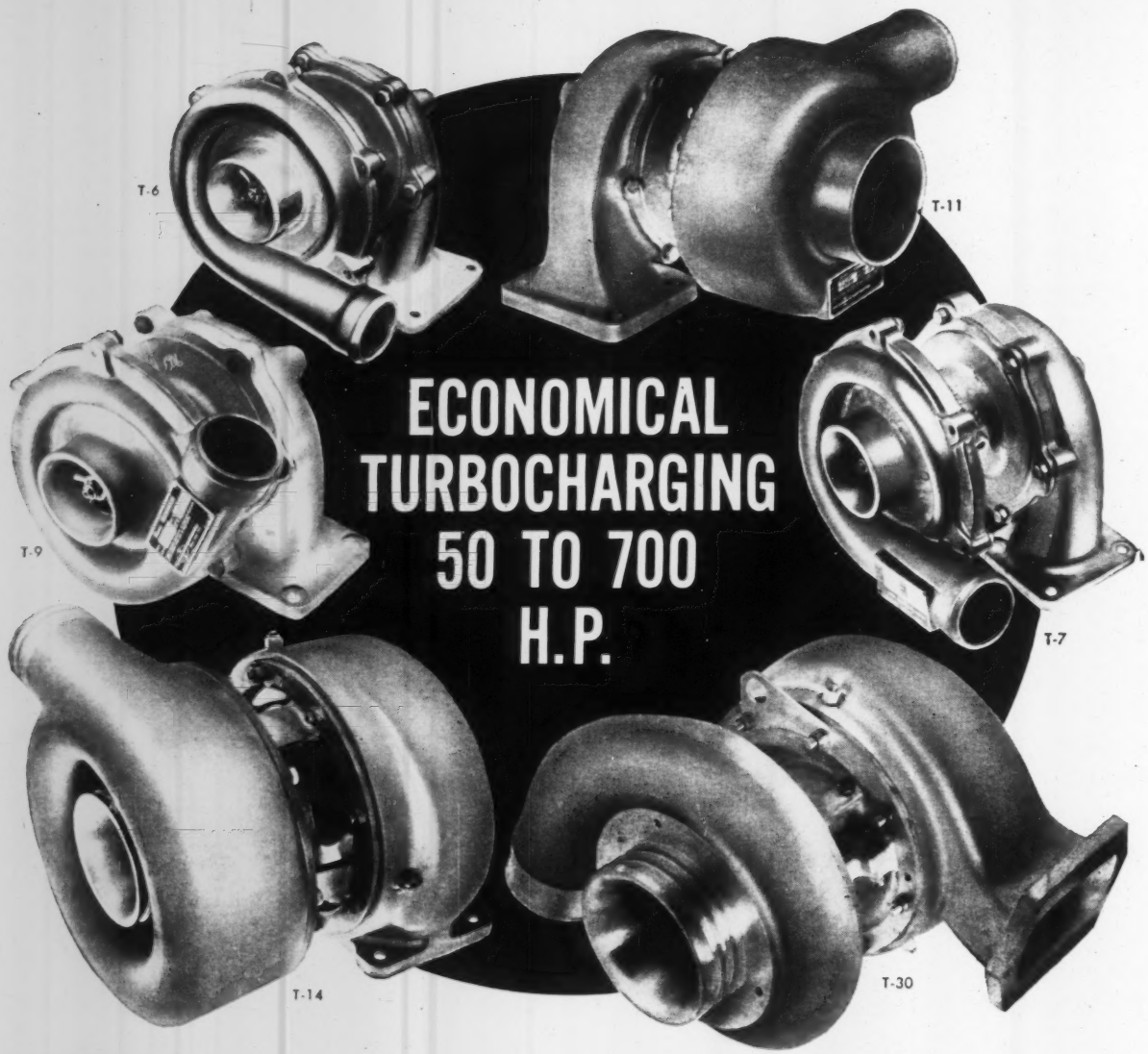

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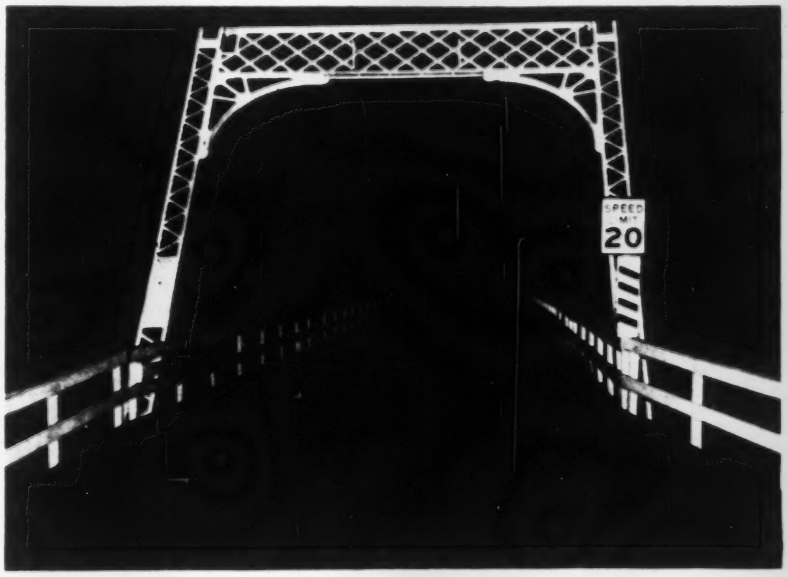
By Day: A White Bridge



By Night: A Giant Reflector

A two-lane truss bridge over the Minnesota River stands out almost as vividly to motorists at night as it does during the daytime.

The Minnesota State Highway Department coated the guard rails, bridge railings and both ends of the bridge with a reflective liquid made by Minnesota Mining & Manufacturing Co.

The bridge, located on Highway 36 south of Minneapolis, is white by day and a brilliant silver in auto headlights by night.

(Turn the page)

LABYRINTH WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!

LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

"See Us in SWEET'S"

New Literature and Free Samples Sent on Request—Use Coupon Below

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Made in Canada for J. E. Goodman Sales, Ltd. Toronto, Ontario

WATER SEALS, INC. DEPT. 4
9 S. Clinton Street
Chicago 6, Illinois
Please send free sample and descriptive literature.

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Men Who Need Pipe FAST Call LaBarge!

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Men who order pipe know it for a fact . . . that, time after time, LaBarge comes through with amazing speed on rush orders, orders filled from a complete stock of ⅛" to 36" O.D. quality steel pipe in a full range of weights and wall thicknesses. EXAMPLE: An order in the morning for two big carloads was on its way by 4 P.M. the same day . . . at jobsite 1000 miles away within 72 hours.

Our service department is keyed for speed too. EXAMPLE: 25 pieces of 6⅝" O.D. pipe can be threaded and coupled in an hour in our own yards.

We offer *complete* service . . . cutting, threading, grooving, welding, coating, sand-blasting, wrapping, light fabrication . . . and a fine line of valves, welding fittings and flanges.

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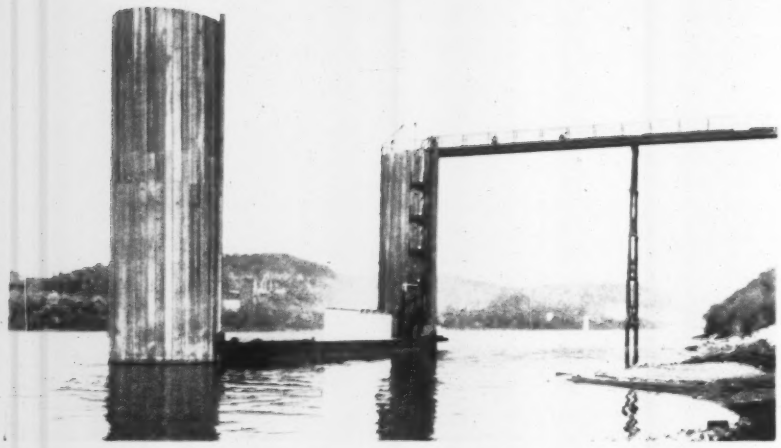


Floating Wharf Eases Problem

This floating wharf recently was put in operation at Siloam, Ky., in an area where the Ohio River sometimes varies as much as 50 ft in elevation.

Designed for year-round transfer of gasoline and liquid butane, the facility consists of a 277-ft access bridge, a 124-ft deck barge and two 17-ft, 10-in.-dia steel sheet pile cells.

The cells, which are filled with sand and gravel and capped with concrete, are seated on rock and extend 60 ft above the normal water level.

Vertical tracks attached to the cells hold the barge in position while permitting it to rise and fall with the water.

Pipelines run across the bridge and down the side of the upstream cell to a point just above the normal water level. On the vertical pipe, manifold valves, set at 10-ft intervals just above working platforms, make it easy to load tankers at any water level.

The installation was built by Dravo Corp. of Pittsburgh for Columbia Hydrocarbon Corp. of New York. It services a recently completed 85 million plant and seven acre underground storage area.

Small Aggregate, More Strength

Tests show that the maximum strength of concrete may be obtained with aggregates no larger than ¾ in. or 1 in.

Test results were reported by Delmar L. Bloem, associate director of engineering, National Sand and Gravel Association and Ready Mixed Concrete Association, Washington, D. C., at the annual meeting of these associations and at the 38th Annual Meeting of the Highway Research Board. The tests were carried out at the University of Maryland.

Mr. Bloem reported these findings:

- Mixing water requirement is progressively reduced as maximum-size of aggregate is increased.
- The reduction in water-cement ratio produced by this change in mixing water causes strength to be improved as maximum size is increased, up to about ¾ in.
- When size of aggregate is increased beyond about ¾ in., the large particles apparently produce discontinuity in the concrete. This causes strength to be reduced. Peak strengths were secured for moderate sizes of coarse aggregate.

Mr. Bloem concludes that, from a strength standpoint, no advantage is derived from the use of large sizes of aggregate. Equal or better strengths can be obtained with moderate maximum sizes.

Japanese Plant Grass With Concrete Guns

Pneumatic concrete guns were used to plant grass at Kyoto University in Japan. After normal replanting methods had failed, the Japanese loaded one of the guns made by True-Gun-All Equipment Corp., Tulsa, with seed, fine earth and fertilizer.

The mixture was sprayed on the ground where it took and produced a good growth of grass.

(*Field and Office continued p. 63*)

Hot Oil Keeps Toll Area Free From Ice and Snow

A hot-oil snow melting system is averting traffic jams at toll booths on Chicago's $101-million Calumet Skyway bridge.

Concealed beneath the concrete, a serpentine-grid network of welded carbon steel piping circulates 1,100 gpm of heated light oil to warm the roadway to 34-36 F. It keeps the 22-lane toll plaza free of ice and snow.

The system covers more than 58,000 sq ft, giving cars 120 to 160 ft of snow free surface to slow down in, and 40 ft. in which to pick up speed.

The oil is heated to a maximum of 160 F by steam from two 200-hp boilers under the toll plaza. It is circulated to the road area through all-welded piping that starts at 8 in. dia and is reduced gradually to 3 in.

The system was designed by Consoer, Townsend & Associates, Chicago. The piping contractor was Chicago Conditionaire Co., Chicago.

New Skyscraper Swallows Old New York Building

A 20-story corner building in downtown New York City has been stripped down to the frame and arches so it can be built into its new neighbor.

An L-shaped, 31-story building (ENR April 3, 1958, p. 26) was built around it on the inside of the block, surrounding the older structure and extending the street fronts on both sides. The older building will be recovered to match the new one. The combined floors of the two buildings will provide a total of 680,000 sq ft of air conditioned office space. The new complex, known as 110 William St., was designed by architects Sylvan and Robert Bien.

Simple Sand Sifter Saves Sifter's Strength

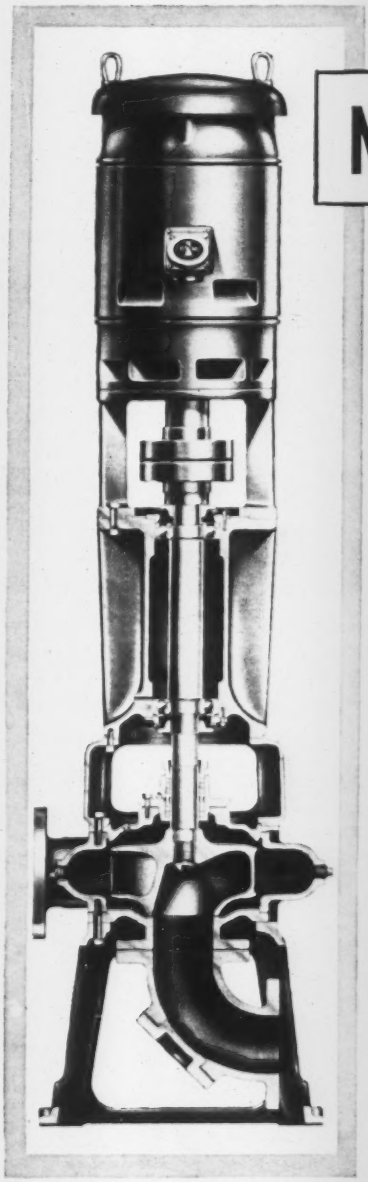
Hand-sifting sand for reuse after it's been used in soil compaction tests can be a time-consuming and backbreaking job on large construction projects.

Peter M. Pithoud, construction inspector for the Alaska District, Corps of Engineers has came up with a device that eliminated the back-work and cut time by 90%. His machine effected a $4,000 saving on a construction project and earned him a $125 award.

What the inventor did was to assemble two screens, one below the other. These are vibrated by an electrical oscillator to sift out the clean sand and discard unwanted material. No more hand screening, aching backs or unpleasant dust.

For higher pumping efficiency

of solids in suspension!



NEW

Fairbanks-Morse

5440A Non-Clog Pumps

Ideal for pumping unscreened liquids with large solids in suspension

- industrial wastes
- sanitary sewage disposal
- industrial processes

Here is your answer to higher efficiencies wherever you are pumping solids in suspension!

All-new Fairbanks-Morse 5440A Non-Clog Pumps feature quick, easy convertibility between any of the many vertical and horizontal types. Power requirements of the pump are always perfectly matched to the electrical and mechanical components. Precision-machined centering fits assure accurate alignment. Exclusive F-M bladeless impeller design minimizes maintenance by preventing clogging from solids and stringy material. The 5440A is only one of many F-M solids-handling pumps designed to meet a broad range of requirements. For information, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Ask for new 5440A BULLETIN!

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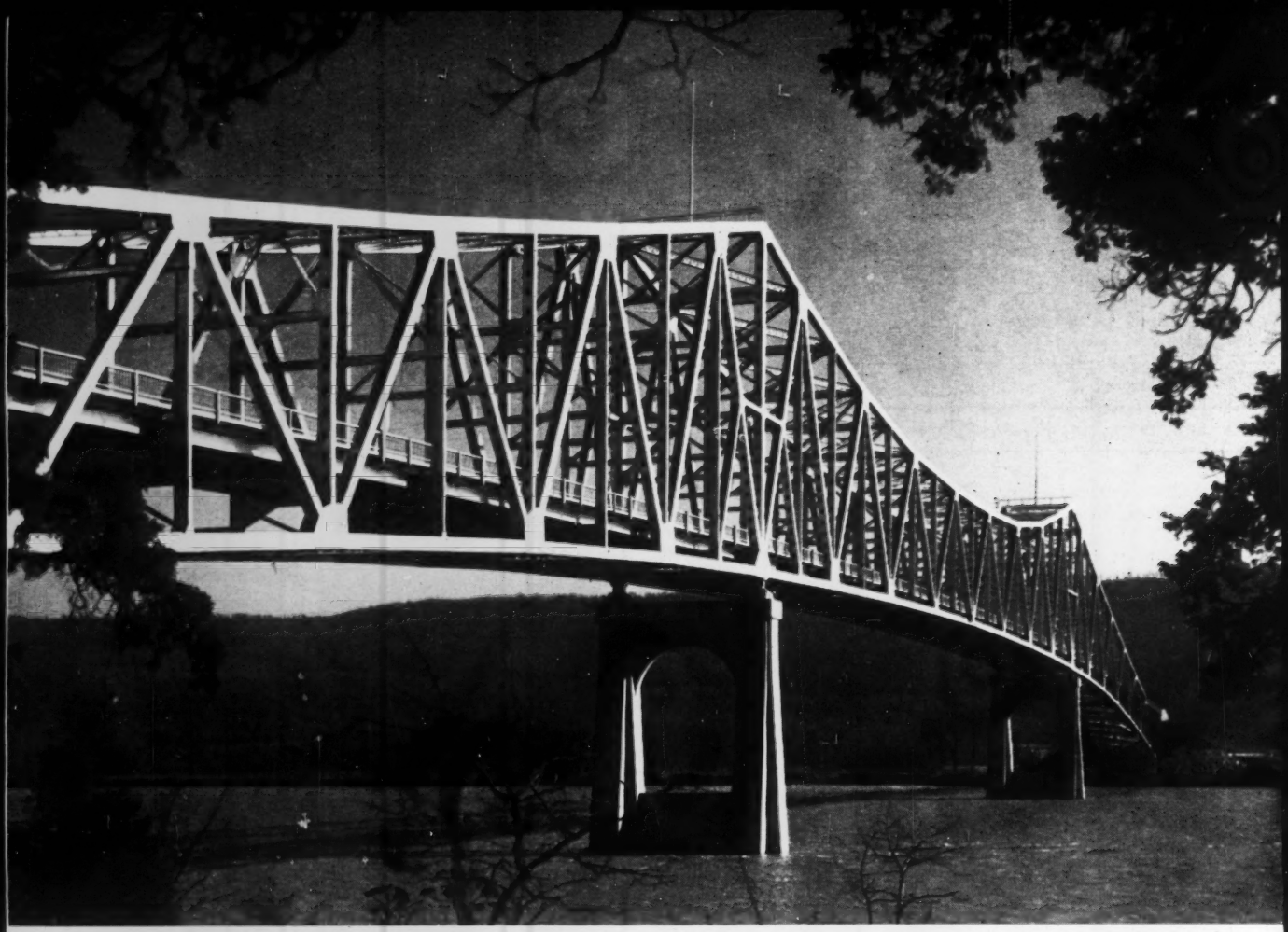
a name worth remembering when you want the BEST

ELECTRIC MOTORS · DIESEL, DUAL FUEL AND GAS ENGINES · PUMPS
COMPRESSORS · GENERATORS · MAGNETOS · HOME WATER SYSTEMS



2,090 tons of structural steelwork erected in 3 months

The new Tennessee River Bridge near Stevenson, in Jackson County, Alabama, points up some of the exclusive advantages of steel in bridge construction—advantages which become all the more obvious when your project involves a difficult water crossing and material handling problems.

Replacing an old ferry, this 1,400′ long, two-lane, 26′ roadway bridge has 3 continuous through truss spans. The 375′ side spans were constructed atop steel falsework mounted on barges anchored on the river bank, and simply floated into position on piers. The 500′ main span was then constructed from the piers. Trusses are 72′ deep at the main piers and 40′ deep at center of the main span. Vertical clearance above normal water level at center of main span is about 60′.

Thanks to precision fabrication and ease of handling, 2,090 tons of structural steelwork for this handsome bridge was erected and connected in only three months. And traffic rolled in only four months.

American Bridge has the facilities, experience and personnel to handle any type of structural steel job. We invite your inquiries.

Tennessee River Bridge *(near Stevenson, Alabama)*

Owner: Alabama State Highway Department
Designs:
Substructure and approaches by
Trotter-Ernest Engineering Company, Mobile, Ala.
Superstructure by Donald C. A. duPlantier, Nashville, Tenn.
Fabricated and Erected by American Bridge Division, USS
Substructure by Harbert Construction Corporation, Birmingham, Ala.

American Bridge Division of USS United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge · Atlanta · Baltimore · Birmingham · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Detroit · Elmira · Gary · Harrisburg, Pa. · Houston · Los Angeles · Memphis · Minneapolis · New York · Orange, Texas · Philadelphia · Pittsburgh · Portland, Ore. · Roanoke · St. Louis · San Francisco · Trenton · United States Steel Export Company, New York

Powerful lamps give . . .

'Touchdown' Lights for Pilots

The high landing speed of jet planes has made the "touchdown" stretch of a runway more critical than ever. A lighting system to eliminate the "black hole" in this area when visibility is poor is being tested at Dow Air Force Base, Bangor, Me., by the Strategic Air Command.

Border lights on wide runways often fail as accurate touchdown references, even under good visibility. The two strings of light are so far apart that, close to the runway, the pilot must keep shifting his glance right and left to orient himself.

Narrow gage lighting for the touchdown area has been designed and is being exhaustively tested as the answer to the problem.

The new lightning system consists of two rows of light fixtures placed 30 ft to either side of the runway centerline. The units are spaced 100 ft apart down the runway for the first 3,000 ft of the runway.

The fixtures are narrow steel boxes embedded in the runway and flush with the surface. They are built to take the weight of landing planes. The fixtures are 8 ft long, 6 in. wide and 12 in. deep. Their length runs in the same direction as the runway.

Half of each unit houses one, two or three high-power lamps and is covered with a heavy steel plate.

The remaining length is a series of long narrow channels open at the surface. These direct light up and out toward the oncoming planes.

The narrow double line of lights is easily kept in the pilot's line of vision, allowing him to more accurately judge initial contact with the runway.

To mark out the runway threshold, or area immediately in front of touchdown, button-type fixtures are being tested.

Light from a lamp at the bottom of 12½-in.-dia embedded units shines vertically through a lens and then passes through two prisms in the top portion of the fixture.

The prisms bend the light. One beam is sent forward along the length of runway and the other in the opposite direction.

The touchdown lighting fixtures are produced by Structural Concrete Products Corp. of New York. The threshold units are made by Multi-Electric, Inc., Chicago.

Both fixtures are equipped with General Electric PAR (parabolic aluminized reflector) lamps developed especially for this use by the company's large lamp department.

Uniform Prestressing Strand

Induction-heating stress relieves strand for prestressed concrete in a new process developed by Bethlehem Steel Co. Careful temperature control, within 10F, and long runs, up to 15,000 ft, produce strand with constant and reproducible mechanical properties.

Forming equipment includes a new mechanism to maintain proper strand tension necessary for uniform stress relieving.

The stress-relieving induction coil is a water-cooled unit, 34 in. long with an inside diameter of about 2 in. Power at 440 volts goes to the coil from a 250-kw motor-generator set.

Two controls govern temperature in the relieving process. One is a voltage regulator tied in with the speed of the forming equipment. Production speed can vary between 25 and 200 ft per min. The other control is a pyrometer which checks strand temperature as it leaves the induction coil.

an EYE OPENER for the CONSTRUCTION INDUSTRY

the automatic HEAVY DUTY remote controlled hoisTower ®

INTRODUCING THE ONLY HEAVY DUTY, REMOTE CONTROLLED, PUSH BUTTON AUTOMATIC HOISTING MACHINE IN THE WORLD

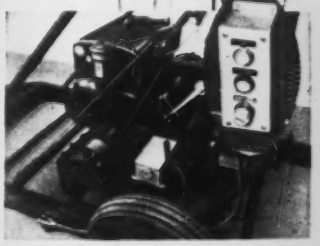
Powered by a 25 hp Engine, this Hoistower generates the electricity which activates and controls it, independent of any outside source of electric power.

By simply setting the "Floor Selector" for any floor and pressing a button, the Hoistower will raise and return endlessly and accurately.

IN ADDITION

Every push button station has a "STOP LOCK" switch, which allows the workman to hold the platform at his work level. NO ONE can pull the platform away from him, until he releases the "STOP LOCK" switch. This new Automatic Hoistower is self-erecting to a working height of 45 ft.— will raise loads of 2500 lbs. at 160 FPM to heights of 150 ft. and more. The Hoistower can be towed to the jobsite with a pick-up truck — then placed and erected by one man in minutes.

The new Automatic is capable of using all standard accessories . . . BUCK Floor Hoppers, Concrete Buckets, Poop Decks, Chicago Booms.



FOR FURTHER INFORMATION . . . CONTACT

BUCK EQUIPMENT CORPORATION
720 E Anderson Ferry Road
Cincinnati 38, Ohio

Agile T-286 hugs a cliff while drilling.

Powerful air compressors team up with self-propelled dual drill rigs to speed work on Highway 17

Le Roi Rotary 600's Carve Modern Highway Through Canadian Wilderness

Deer trail today — super-highway tomorrow! The terrain was rugged; the work was tough. But Le Roi equipment kept work "on schedule."

Each of the 6 Le Roi rotary compressors used on this job is capable of delivering 600 cfm of air at 110 psi. They kept the 6 Le Roi T-286 self-propelled dual drill rigs and crews humping 24 hours a day. Whether the rigs were perched on crags, inclines, or in a hole, the easy-to-move rotaries were close behind, shortening hose lines — assuring full power for drills.

The Rotary 600 is a natural for jobs like this. Its automatic governor control saves fuel by the barrel. The hydraulic positive-acting clutch permits running the engine alone during engine warm-up, increasing engine and compressor life. An efficient modulating compressor control keeps air pressure constant all day long. Individually-cast cylinders of precision-mated design are located for easy servicing and vane inspection in minutes without removing other parts.

Speed construction, whether highway or building, with Le Roi Rotary 600 air compressors — and matching Newmatic Air Tools.

LE ROI ROTARY COMPRESSORS

PORTABLE AND TRACTAIR® AIR COMPRESSORS
STATIONARY AIR COMPRESSORS
NEWMATIC® AIR TOOLS

PC-902

Rugged "tornadoes on wheels" and agile T-286 self-propelled dual drill rigs shown cutting swath through Canadian wilds north of Sault Ste. Marie for Highway 17.

New Crane Uses Drop-Ball

Marion adds a new 45-ton wagon crane to its line of excavating equipment with the Model 362. It is an off-highway unit designed primarily as a rehandling machine and for drop-ball application in quarries. It can carry up to 120 ft of boom and 15- or 20-ft jibs.

Mounted on a 20-ft, 1 in. Maxi carrier, the wagon crane has a working weight of 111,700 lb. Carrier width is 12 ft, 2 in.; over-all height is 18 ft, 9 in.

Power is either by a GM 6-71 diesel with electric starter and straight drive standard, or a Cat D326E with gasoline engine starter and speed reducer drive standard.

Other major optional features include independent propel and independent boom hoist. Marion Power Shovel Co., Marion, Ohio.

'Baby Brother' Earthmover

This double-bowled, 50-ton scraper is the third major piece of electrically driven earthmoving equipment introduced recently by R. G. LeTourneau, Inc. Designed specifically for highway work, this machine is a "baby brother" to a 130-ton, double-bowled unit previously built for dam and airport construction (ENR Nov. 27, 1958, p. 55). A single bowl, 60-ton unit completes the trio (ENR Sept 25, 1958, p. 69).

(Turn the page)

HOW TO RUB or GRIND CONCRETE

Today, more and more builders specify a fine finish for concrete walls and ceilings. Because of this new requirement, and of the time and expense involved for hand finishing large areas, Stow Manufacturing Company has developed two, easily portable flexible shaft grinders for finishing concrete. These grinders are electrically powered.

Two methods are used to smooth off hardened concrete: wet rubbing and dry grinding. Wet rubbing required for smoothing green concrete to a plaster-like finish. Use slow speed grinding wheel or disc. Apply water while grinding. Wet concrete can also be painted on with a brush, then smoothed into holes with the grinding wheel. Dry Grinding—use a high speed grinding wheel or abrasive disc to smooth dry concrete.

Either of Stow's portable electric grinders, the ½ HP model G-80-C or the ¾ HP model JT-50, can be used for wet or dry grinding. Both models are available with open or totally enclosed motors, and are equipped with 8- or 12-ft. flexible shafts. Angle heads with different speed ratios can be selected. Write for STOW's pamphlet, Grinding Concrete, for complete information on proper speeds, grinding discs and wheels for both wet and dry concrete finishing. Stow Manufacturing Co., Binghamton, N. Y., also makes a complete line of concrete vibrators, rotary trowels, and screeds.

STOW MANUFACTURING CO. Dept A-1
19 Shear St., Binghamton, N. Y.

Please send me your pamphlet, GRINDING CONCRETE.

Name ..... Title .....

Company .....

City ..... Zone ... State .....

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the contractor's drilling rig!

Because it does so many jobs...

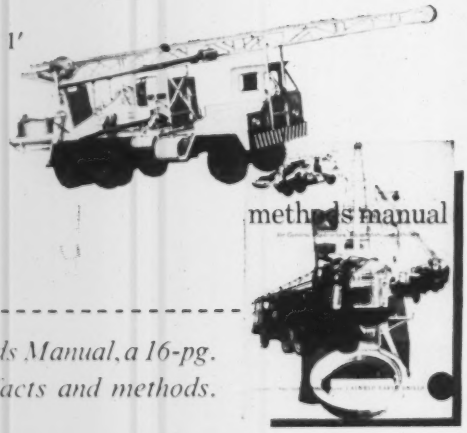
- —digs caisson pier holes
- —prepares belled footings
- —pre-bores concrete piles
- —provides big sub-soil samples
- —drills dry wells

...it drills any size hole from 1′ to 10′ dia. and 200′ deep.

...it excavates to a depth of 45′ in less than one hr.

...it travels fast from job to job.

...it sets up ready for drilling in minutes.



Write for the new Methods Manual, a 16-pg. booklet filled with job facts and methods.

CALWELD DRILLS

CALWELD, INC., 7222 E. Slauson Ave., Los Angeles 22, California

. . . New Products

The latest machine, pictured at work on a section of the Stemmons Expressway in Dallas, Tex., is powered by a single 600-hp diesel engine that turns two generators—one A.C., the other D.C. The D.C. generator supplies power to motors geared directly to each wheel rim, while the A.C. dynamo powers motors on the components.

The unit is 74 ft long, 12 ft wide, but, because of its double articulation, it can turn in about 60 ft.

The principal advantage claimed for the two bowl design is its ability to load without assistance from another machine. R. G. LeTourneau, Inc., Longview, Texas.

New Swing-Bolt Coupling Ideal For Fast Jointing

A new malleable-iron swing-bolt pipe coupling has been added to the line of the Charles E. Manning Co., manufacturers of grooved-type couplings and fittings.

When coupling grooved-end pipe, installation time and labor is cut by 25%, according to the manufacturer. The gasket is applied, the housing is placed in position, the bolt is swung closed and the single nut is tightened.

The coupling is reportedly designed with a positive, safe-locking device that can't snap open. Rated up to 500 psi working pressure, the swing bolt coupling is available in 1-, 2-, 3- and 4-in. sizes. Charles E. Manning Co., 4700 Clairton Blvd., Pittsburgh 36, Pa.

Briefs . . .

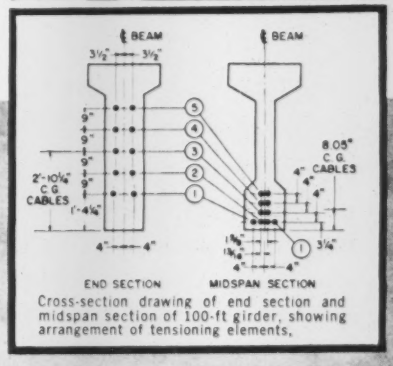
• **Flotation tires**—Smooth-contour flotation tires for trucks are said to prevent stalls on sandy beds. They are also recommended for hauling over soft blacktop or cement without marring the surface. The low-pressure, 20-ply nylon tires have a carrying capacity of 16,000 lb per tire. One 54x20 flotation tire is used to replace dual tires. Harmo Tire & Rubber Corp., 1050 18th St., Detroit 16, Mich.

• **Jumbo brick**—"Cube Jumbo" face brick, 3 x 9 x 3 in., provides 28% more coverage than present jumbo-size brick, yet weighs no more. It comes in five colors. Sayre & Fisher Co., Sayreville, N. J.

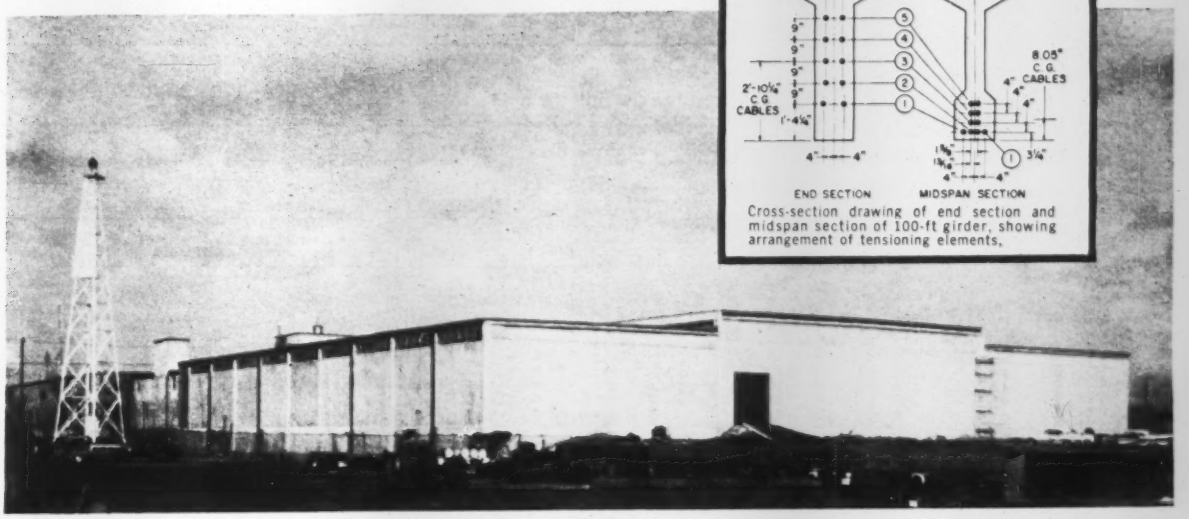
• **Neoprene flashing** — One-piece neoprene roof vent flashings are now available for sealing vent pipes on homes and commercial buildings. The flashings feature a special double-seal collar design and can form weathertight joints without the need for special tools or hot metals. The new product has passed building-code requirements in several

Architect-Engineer offers some impressive reasons why his firm chose Prestressed Concrete for Paper Storage Warehouse

Photo shows how 100-ft girder rests on column. End of 70-ft girder is positioned on seat seen at top of ladder, left.



Cross-section drawing of end section and midspan section of 100-ft girder, showing arrangement of tensioning elements.



Newman & Company Warehouse, embodying twelve 100-ft post-tensioned girders, twenty-two 70-ft post-tensioned girders and about 600 pre-tensioned double tee beams.
Architects and Engineers: Cronheim & Weger, Philadelphia, Pa. Contractor: Lauter Construction Company, Philadelphia, Pa. Prestressed Fabricators: Atlantic Prestressed Concrete Co., Trenton, New Jersey.

Because Nathan Cronheim, architect-engineer, has much to say about this structure, we quote him as follows: "The design of the new waste paper storage building for Newman & Company, Inc., manufacturers of paper board in Philadelphia, incorporates a number of relatively new techniques and processes in developing a more fire-resistant building and in expediting the handling of stored materials.

"The roof structure is composed of twelve 100-ft span and twenty-two 70-ft span post-tensioned girders. Each girder was post-tensioned with ten Freyssinet Cables composed of twelve .276" diameter Roebling wires. (See diagram). The approximately 600 double T's used in the roof structure are pre-tensioned, using the Roebling standard seven wire pre-tensioning strand. The great strengths resulting from this method allow the roof structure to be much shallower and lighter in weight than would be possible in other types of equally fire-resistant construction.

"The building is two hundred and forty-ft wide, made up of a center bay one hundred-ft wide and two side bays each seventy-ft wide. There are, therefore, girders one hundred-ft long in the center bay flanked on either side with girders seventy-ft long. Since the girders are spaced twenty-five ft on centers, the T's which span from girder to girder are almost twenty-five ft in length. As can be readily seen, due to the exceptionally long spans, it is necessary to use the higher strength materials mentioned to keep the dead weight of the roof structure to a minimum.

"Because of the prefabrication of so many of the elements of this building, such as the girders, roof plank, wall panels and many of the columns, the erection of the building moved very rapidly once the foundation work was completed."

Nothing makes a better case for the prestressed concrete method than the *architect's own words*. In all of the many years that Roebling has concerned itself with tensioning elements for prestressed concrete, we have found that its inherent benefits are best articulated by the architects and engineers who design for, and work with, prestressed concrete. During these years we have developed and accumulated a significant body of knowledge, data and experience that we will gladly share with you. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, bearing on any phase of prestressed concrete, will bring a prompt and fully documented reply.

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BIG PERFORMANCE

Hauling tremendous 230-ton transformers over soft roadways demands equipment capable of tremendous performance. Such performance is found in this new super Mack tractor recently purchased by Gerosa Haulage and Warehouse Corporation, New York.

Gerosa, noted for taking on the biggest, toughest and most unusual hauling jobs, for years has successfully teamed up with Macks . . . and found them equal to any job tackled. Mack transmissions, famous for built-in quality and stamina, stand up to the most demanding jobs. And for unsurpassed pulling power under the most adverse conditions there is nothing comparable to the Mack-built Balanced Bogie with exclusive Power Divider.

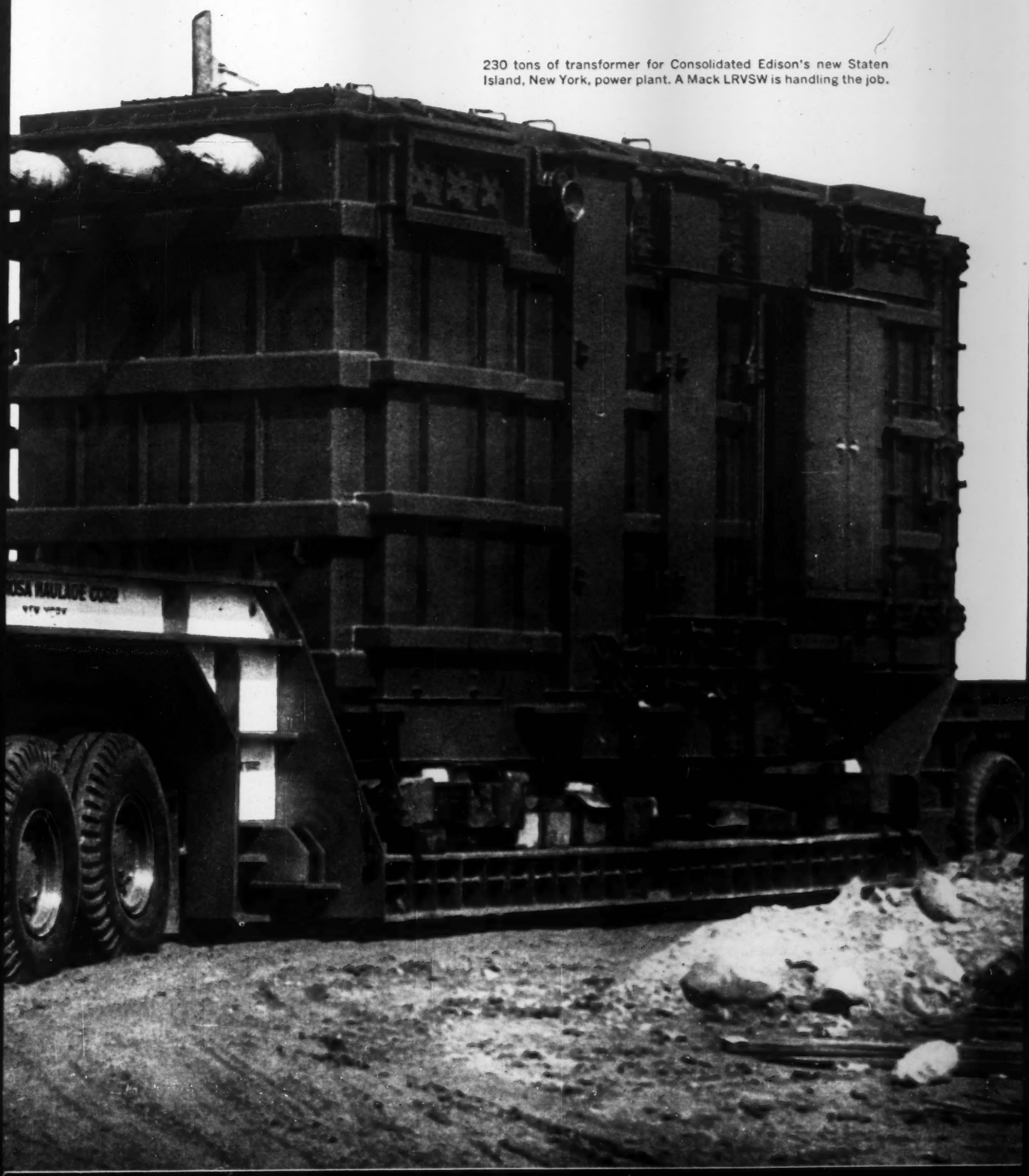
Big dramatic job—every-day bread-and-butter job . . . whenever it must be done efficiently, dependably, with the least downtime, there's a Mack that will best fill the bill.

See your Mack branch or distributor for all the facts on the most complete line of heavy-duty trucks available today. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

6417

MACK
FIRST NAME FOR
TRUCKS

ON THE *BIG* JOBS



230 tons of transformer for Consolidated Edison's new Staten Island, New York, power plant. A Mack LRVSW is handling the job.

FOR TRULY

UNDISTURBED SAMPLES
FROM DIFFICULT FORMATIONS

ACKER-DENISON CORE BARRELS

THE ACKER-DENISON CORE BARREL PERFORMS WHERE OTHERS FAIL

The ability of the Acker Denison Core Barrel to obtain **undisturbed samples** from sand, hard clays, silt and other difficult cohesive soil conditions accounts for its worldwide acceptance by Soil Engineers.

ACKER-DENISON CORE BARREL —PROVED AND IMPROVED

While the basic features of the original Denison are duplicated in the samplers manufactured by Acker, numerous improvements suggested by Acker's 40 years of soil sampling experience are incorporated in the new Acker-Denison. It is these improvements that make the Acker-Denison even more useful and efficient than before!

Remember, no other manufacturer can offer the improved performance and exclusive patented features of Acker's new Denison Core Barrel. This proud achievement of Acker development and progress is exclusively Acker!

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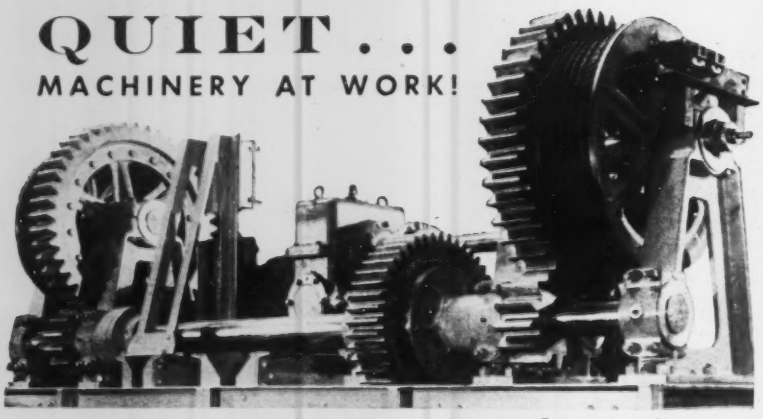

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Earle Speed Reducers and Operating Machinery are noted for compact, self-contained design . . . smooth, quiet action. They are known for their long trouble-free operation even under the most adverse conditions. The really tough jobs go to Earle. Why not send in the coupon below and acquaint Earle with your "tough problems!"

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. . . New Products

key cities and states and is being evaluated by government housing authorities. DUPONT INFORMATION SERVICE, 5133 DUPONT BUILDING, WILMINGTON 98, DEL.

• **Adhesive**—A rubber-resin waterproof adhesive, "Bondmaster Z377," quickly bonds polyethylene film to concrete, wood, and a variety of other surfaces. RUBBER & ASBESTOS CORP., 225 BELLEVILLE AVE., BLOOMFIELD, N. J.

• **Hand saw**—A new hand saw and a complete line of diamond blades can cut through brick, block, concrete or tile; remove hard mortar from joints; and cut or trim marble or limestone on the job. BULLDOG MANUFACTURING CO., 1665 BRADLEY ROAD, WESTLAKE, OHIO.

• **Aluminum sheathing**—Aluma-Sheeth, a light residential sheathing board is made of perforated aluminum foil on both sides of a ½-in. fiberboard core. It can be cut with a knife and can be applied with either nails or staples. DENNY PAPER AND BOARD CO., 2208 WASHINGTON AVE., PHILADELPHIA, PA.

• **Steel-framed homes**—The 1959 line of Steelstyle, steel-framed, factory-manufactured homes, features steel-framed panels, a factory pre-assembled truss system and individual steel components. UNITED STATES STEEL HOMES DIVISION, UNITED STATES STEEL CORP., 525 WILLIAM PENN PLACE, PITTSBURGH 30, PA.

• **Mastic sealer**—A mastic sealing material with high resistance to heat and cold can be applied to both similar and dissimilar materials. Called WAT-R-BAR, it comes in bulk packages, extruded bead and tape forms, and can be molded into any shape desired. PRESS-TITE-KEYSTONE ENGINEERING PRODUCTS CO., 39TH AND CHOUTEAU, ST. LOUIS, MO.

• **Roof deck fastener**—An H-shaped aluminum alloy clip slips over a plywood roof deck's panel edges at midspan between rafters or purlins, thereby stiffening the joints between two adjacent panels. PLYWOOD RESEARCH FOUNDATION, DOUGLAS FIR PLYWOOD ASSOCIATION, TACOMA 2, WASH.

• **Wiring devices**—A new line of combination wiring devices for new construction or rewiring incorporates dual pressure-lock terminals that permit looping of conductors. It also has internal connection to couple the devices. GENERAL ELECTRIC CO., 85 HATHAWAY ST., PROVIDENCE 7, R. I.

• UNIT in a gravel pit is always "in there swinging" . . . piling up big payloads . . . earning PROFITS! The machine cuts away for a healthy load, swings and dumps in a hurry. Owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction, economical performance and low upkeep which all add up to earning power. Why not investigate what UNIT can do for you — on your next excavating and material handling job? Write for literature.

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A8-5019

THE MAN: Joseph W. Bateson, soft-spoken head of J. W. Bateson Construction Co., Dallas.

'Between the Contract and the

The formal opening of the Southland Center in Dallas this month marks a high point in the career of Joseph W. Bateson, soft-spoken owner of the multimillion-dollar J. W. Bateson Co., Inc.—general contractor for the development.

The $35-million center is one of the largest construction jobs Mr. Bateson's firm has handled to date. It was completed four months ahead of schedule, thanks to what this contractor terms a series of good breaks.

The project covers a square city block in downtown Dallas and includes the 42-story Southland Life Tower—tallest building west of the Mississippi River—and the 28-story, 600-room Sheraton-Dallas Hotel. (ENR Nov. 13, 1958, p. 29.) Foundations have also been constructed for a future 50-story office tower.

• **The beginning**—The 50-year-old Mr. Bateson heads one of Dallas' biggest construction companies. Now a millionaire, he made his fortune the hard way.

He was graduated from Texas A & M College in 1931 as a civil engineer. Like almost every young man who completed college in those depression years, he began his career by pounding the pavement in search of a job.

"My salary was a meager $15 a week, but I was very glad to get it," says Mr. Bateson of his first job with Christy-Dolph Construction. His second job was with the government and took him first to Barksdale Field, La., then to Fort Bliss, Tex. That one lasted three years.

In 1934 he went to work for an older brother, L. C. Bateson, who also owns a Dallas construction firm. The two are now friendly competitors.

Mr. Bateson planned to form his own company as soon as he had the capital and the practical experience. After about a year with his brother's firm, he went to Ruston, La., to work as an estimator with the T. L. James Co., general contractor.

By 1938 Mr. Bateson had accumulated enough money to go into business for himself. He opened a small one-room office in Dallas and started to bid on all kinds of jobs. After 54 unsuccessful bids, the new company won a contract for a $5,800 basement in a small-town post office.

• **Lucky breaks**—Looking back on those first lean days Mr. Bateson recalls, "It was almost unbelievable the way things worked out. It was not rare then to have 25 bidders on a job. And of the 54 I bid on, I was second bidder on 28. One $250,000 job—and that was a lot of money in those days—I missed by $130. It was depressing at the time, but I have often thought since that I have been lucky not to get some of them."

In one instance, this luck was brought home to him dramatically. One of Bateson's most vivid memories is of the bidding on an Austin housing project for which a new type of building material was to be used.

"The first bid called was $420,000 and most of the others were between that and $325,000. I will never forget one contractor who was present. He turned green as the bids were read out and had to support himself with his arms around the shoulders of his two sons. As each new figure was read, he seemed to suffer more. Then my bid

THE JOB: Southland Center, $35-million Dallas project.

Check: Headaches'

of $279,000 was read out and his recovery was miraculous. His bid was $278,000; my bid reaffirmed his faith in his figures. However, he went broke anyway because of the experimental nature of the new material."

• **Success arrives**—Recalling his 21 years as a contractor, Bateson says: "Our operation is entirely different from what it was just ten years ago. Our company has acquired fine key employees who make it possible for us to operate successfully."

Including the Southland Center, the firm was working on more than $100 million in construction projects in eight states during the first quarter of 1959.

The firm employs some 75 engineers. Its policy is to hire and train five or six promising young engineers each year.

Bateson puts in an 8:30 to 5:30 day, unless longer hours are required to prepare a major bid. "I'm getting a little too old for those 16-hour days I worked for so many years," he says.

Bateson checks each bid personally and also visits each out-of-town project every two or three months.

Bateson's philosophy of bidding: "Don't point to a certain job and say you must have it. It may sometimes make you bid too cheap. A contractor should allow himself a safe margin of profit on each job. We try to bid all jobs on the same basis. However, you have to have the feel of a particular job to get it—and get it at the right price."

As for contracting, Mr. Bateson says: "A contractor has only two happy days on the job—the day he gets the contract, and the day he gets his final check. The others are likely to be filled with headaches."

• **Other projects**—The Bateson company now has under construction 4,159 Capehart housing units; the largest group is in a $22 million project at Fort Leonard Wood, Mo. Other major work under way includes a $6.8 million federal court house and post office at Omaha, Neb., and a $2.6 million federal office building at Huntington, W. Va.

Bateson says such projects as Capehart housing and warehouses are the most profitable, but that undertakings like the Southland Center and the $22-million, 36-story Republic National Bank Building in Dallas, for which he was general contractor several years ago, are naturally more challenging and stimulating to a builder.

"When I started in the early '30's, the roadbuilder was often a former mule skinner, and the contractor had usually been a mechanic of some kind, and had gone into contracting from a trade," Bateson recalls. "Today, a contractor really should be a trained engineer because there is so much more science in building. A successful contractor needs to be a specialist surrounded by specialists, or even better, he should be an expert manager surrounded by specialists."

Bateson is active in the Dallas chapter of the Associated General Contractors and was its president last year.

He also has a strong interest in baseball. Largely because of this interest, and because it seemed to have good business possibilities, J. W. Bateson Company, Inc., bought the franchise to the Dallas Rangers baseball team early in 1958.

"As president of the Rangers, I work with Stan McElvaine the way I work with a construction manager on a project," says Bateson of the new general manager of the team. "We confer in person or by phone at least once a day."

Mr. Bateson also owns the Lyon-Gray Lumber Co., some warehouses, a subdivision of 366 lots and a shopping center, which he is developing in Dallas. He also has some oil interests. "We just about break even on our oil ventures," Mr. Bateson says, "but they are fun to work with."

Sika's Promotions Mean More Construction Aid

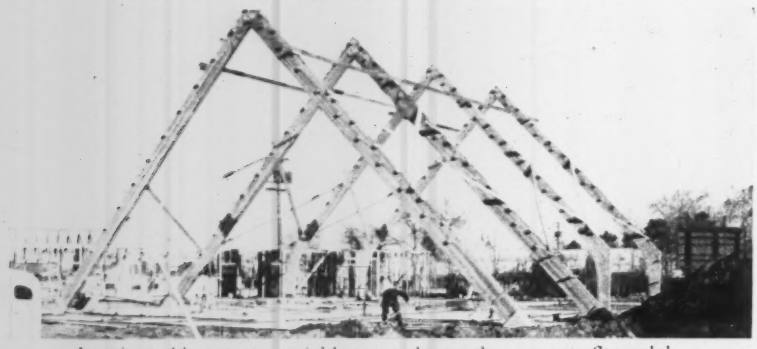
Sika Chemical Corp. has promoted two key engineers and appointed a third, to offer more technical information and service to the company's clients in the concrete construction industry.

R. A. Jessen becomes chief engineer, promoted from his former midwestern division manager's position. J. Wayman Williams, Jr., becomes manager of technical service after having served as an engineer in this department for five years. Robert K. Lockwood joins Sika as advertising manager after 10 years of service on the staff of the American Society of Civil Engineers. He most recently has been assistant to the Executive Secretary of ASCE.

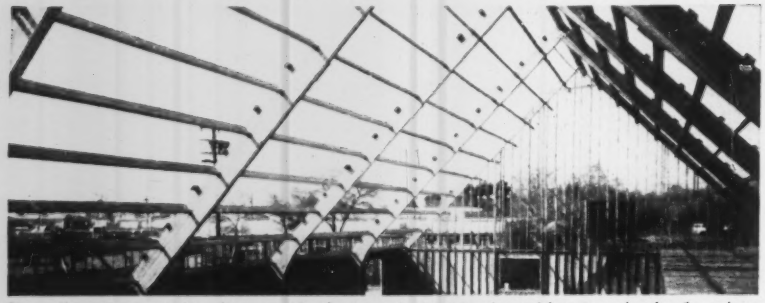
(Turn the page)

Tectum Deck Helps Save $8400

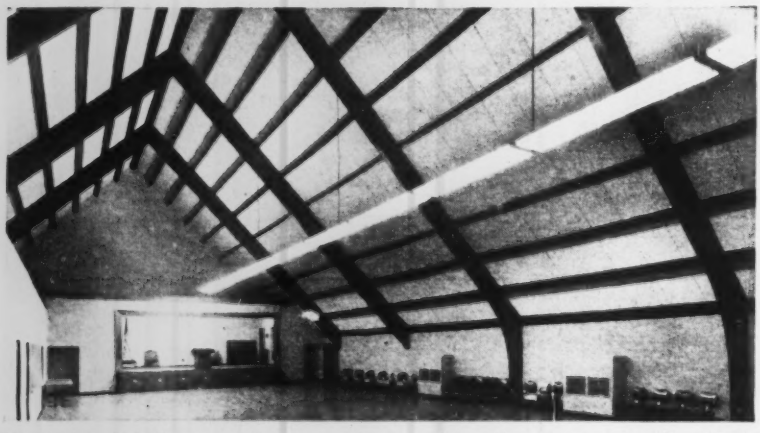
Specifications for the A-shaped B'Nai Jacob Temple, Bakersfield, California, were changed midway during the planning of the building. 2½" Tectum roof deck material and laminated beams and wooden purlins were substituted for a total savings of $8400. Tectum's contribution was its unique combination of structural, insulating and acoustical values — a single material with a single erection cost for multiple benefits. The photos illustrate the 3 basic steps of construction — simple, safe and completely satisfactory.



Laminated beams are quickly erected over the concrete floor slab



Framing for auditorium and classrooms. Wooden 2 x 10 purlins are bolted into steel hangers in the framing. Tectum is nailed to these purlins.



Tectum roof deck, exposed over wood purlins, is warm and inviting. The beautifully textured surface is factory-finished, normally needs no other finishing. Tectum is firesafe, too, and has favorable insurance rates in most communities. Tectum meets all seismic requirements as a roof diaphragm.

Architect-Engineer: Charles H. Parker. *Contractor:* A. D. Sinclair.

For complete information write Tectum Corporation, Newark, Ohio.

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. . . Men and Jobs

George H. Hodges of Duval Gives Up His Presidency

George H. Hodges, president of Duval Engineering & Contracting Co., Jacksonville, Fla., and Mrs. Hodges, vice president, have resigned from the company. They will sell their stock back to the company for eventual resale to the employees.

Alexander Brest, secretary and treasurer of the company, has resigned as secretary, but he will remain as treasurer.

Duval, formed by Mr. Hodges in 1924, is one of Florida's most active builders of bridges, streets and roads, airports and industrial buildings.

B. E. Ellis, who has been general superintendent, was elected to the presidency. C. D. Edwards, former superintendent, was elected secretary.

T. W. Berry Joins Crump As Construction Manager

Thomas W. Berry, a former senior engineer in the Atomic Power Plant Division of Westinghouse Electric Corp., has been appointed manager of construction of Crump, Inc., Pittsburgh engineers and constructors.

He took part in the design and supervision of the construction of the world's first full-scale nuclear power plant, at Shippingport, Pa. Prior to his association with Westinghouse he was senior engineer of construction of the Gaseous Diffusion Plant for the Atomic Energy Commission at Portsmouth, Ohio.

He was also associated with the construction of the atomic power submarine facilities for General Electric Co., near Schenectady.

Careers

Business

John T. Pinkston, an authority in the chemical process field, has been named to the newly created position of process consultant of United Engineers & Constructors Inc., Philadelphia.

George J. Thormyer, former chief engineer of the Ohio Highway Department, has joined Photronix, Inc., of Columbus, Ohio, as executive vice president and also as assistant chief engineer of the company's associated consulting firm, Barrett Associated Engineers.

Robert C. Briggs, district engineer for the six New England States for the Asphalt Institute, will leave the institute to become president of the newly incorporated Briggs Engineering & Testing Co., Cohasset, Mass.

Karl Koehn, formerly assistant vice president of Commercial Construction

Corp., Detroit, has been appointed assistant vice president of Hunter Construction Co., Youngstown, Ohio. He will handle the company's mechanical construction division.

Sam L. Ellis has been promoted to vice president of the L. P. Cox Construction Co., Sanford, N. C. He has been with the firm since his graduation from North Carolina State College as a construction engineer.

James E. Bentley has resigned as president and as a director of A. Bentley & Sons Co., of Toledo, a general contracting group. He will be succeeded as president by **James Bruere. T. M. Connelly,** a vice president, was elected to Mr. Bentley's place on the board of directors.

L. G. Arnold, founder and president of L. G. Arnold, Inc., Eau Claire, Wis., a general contracting company, will leave that position, to be succeeded by his son, **Jack E. Arnold.** L. G. Arnold will become the board chairman.

Associations

A. C. Blackman, former head of California's Division of Industrial Safety, has become managing director of the American Society of Safety Engineers, in Chicago.

Stanley I. Roediger, president of the Roediger Construction Co., Cleveland, Ohio, has been elected president of the Cleveland chapter of Associated General Contractors. He succeeds **Ernest M. Green,** of the American Construction Co.

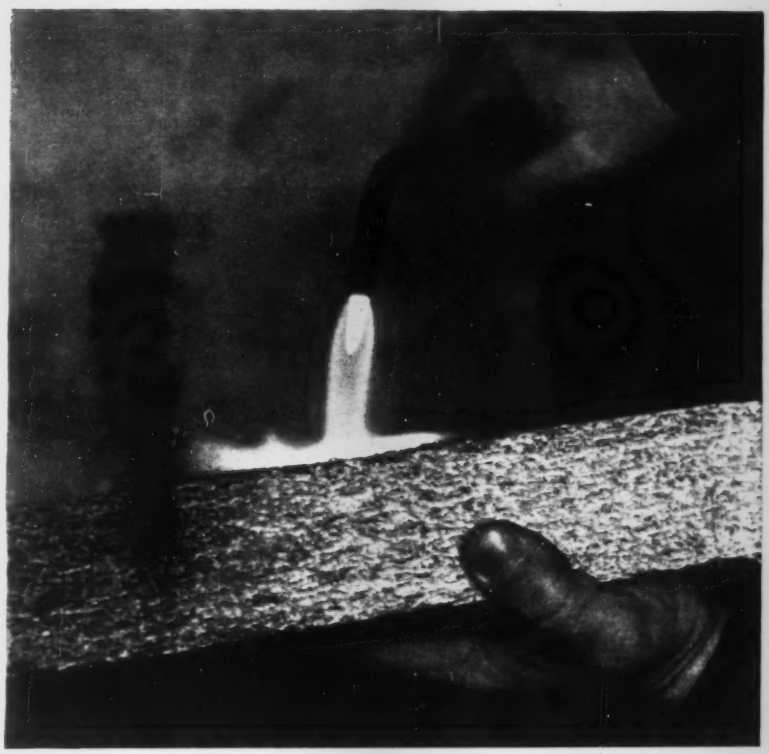
Richard A. Wetzig, of Ferguson & Edmondson Co., Pittsburgh, has been elected president of the Constructors Association of Western Pennsylvania. He succeeds **Charles H. Booth, Jr.,** of Burrell Construction & Supply Co., New Kensington.

George Pesa, president of Felix Pesa & Sons Construction Co., Youngstown, Ohio, is the new president of the Mahoning-Shenango Valley chapter of Associated General Contractors. His predecessor was **Steve Fraysier,** of Fraysier Construction Co., Warren, Ohio.

Public Works

J. N. Robertson, director of highways of the District of Columbia, retired from his post after 42 years with the department. He is a vice president of the American Association of Highway Officials and a past president of the American Road Builders Association.

Earl H. Baggs, of Ahoskie, N. C., has been named assistant division engineer of the First Division of the North Carolina Highway Department. He succeeds **J. J. Gilbert.** He joined the department in 1947 after serving 12 years with the Florida State Highway Department.



A sample slab of Tectum roof deck is shown exposed to the intense heat of a gas torch. Tectum will not support combustion.

Tectum...a specification for firesafe school construction

Tectum roof deck materials are listed noncombustible by Underwriters' Laboratories, Inc., and carry favorable insurance rates in most communities. Tectum is not only firesafe, but structural, insulating and acoustical. It is engineered for maximum safety of roof loading and for worker's safety while on the roof deck. It also possesses high impact strength. Tectum has helped popularize the open construction concept with its multi-value benefits and natural good looks. It is widely used for remodeling as well as new school construction.

Over fifty percent of all Tectum produced for the past six years has gone for school and university building construction. It combines structural advantages and cost reduction features for greatest application. Write Tectum Corporation, Newark, Ohio for complete information. Plants in Newark, Ohio and Arkadelphia, Arkansas. Regional offices and competent distributors in all major areas.

A TECTUM ROOF DECK becomes an effective fire barrier in any kind of building — an ideal material meeting rigid codes for school safety.

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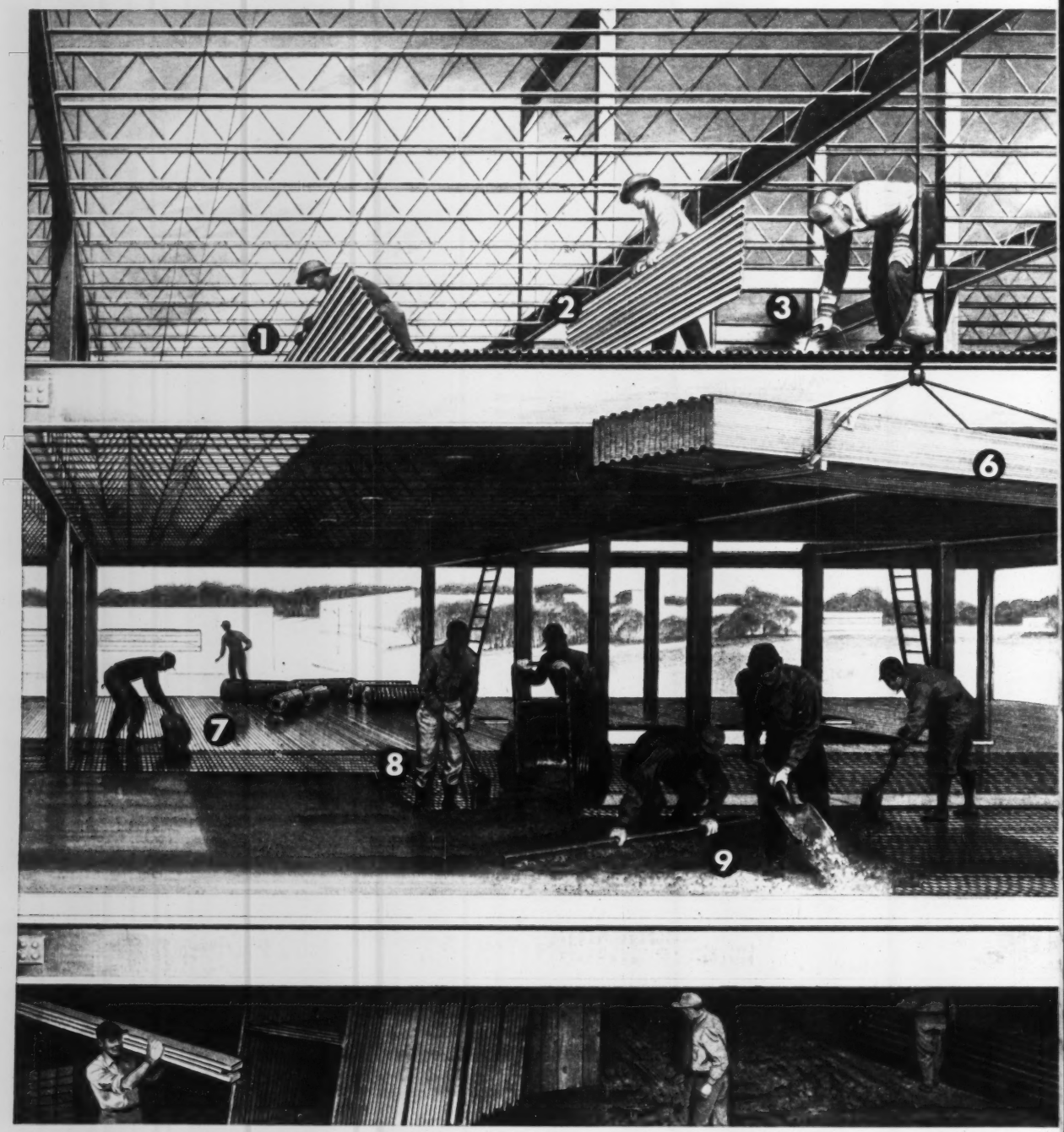
Speed! Strength! Economy!



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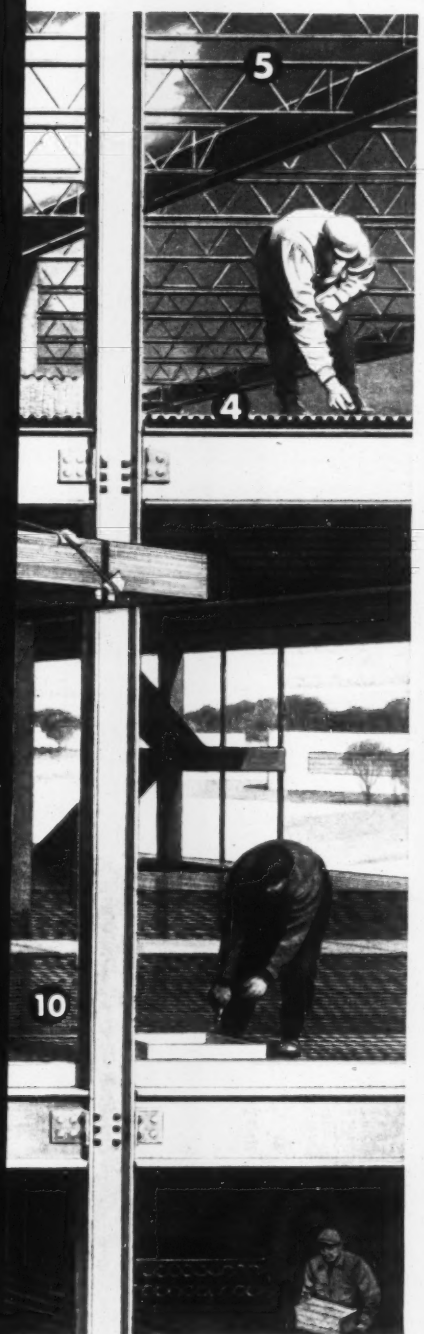
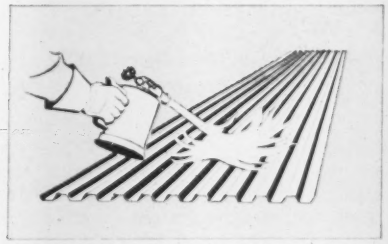
2. **LIGHT, RIGID SHEETS** drop in place. No bulky rolls to carry, unroll or stretch.
3. **POSITIVE ANCHORAGE.** Sheets *weld* to joists. Strength enough for seismic design!
4. **CHOICE OF FASTENERS.** You may clip or weld, depending on lateral load requirements.
5. **NO SIDE PULL** on joists. No temporary bracing or blocking. Stiff sheets act as centering.
6. **WIDE RANGE** of gages. Use Corruform or Tufcor for spans up to 8′.
7. **SELECT PROPER MESH** for your slab and span design. Corruform gives you a choice!

Corruform® floor slab base delivers all three!



No wonder so many architects and engineers use the name "Corruform" to describe an entire system of forming! Corruform steel centering was the *first* ideal base for floor slabs. Today, Corruform is *still* finest! Check the features below. See for yourself why Corruform offers easier construction, lower cost, faster occupancy than any comparable floor system on the market! Available locally through more than 100 Granco stocking distributors, from coast to coast! Mail the coupon for more facts.



NO FIRES! Corruform and *all* other materials used in this floor system are non-combustible. No paper or other inflammable materials. No danger to men or materials on the job.

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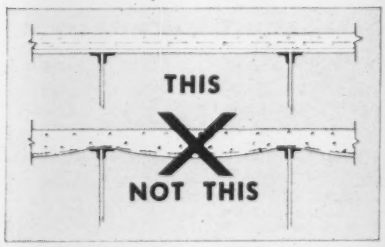
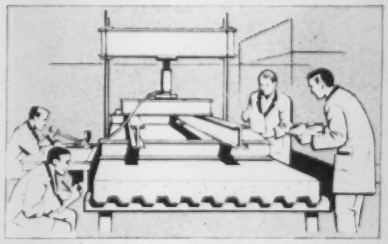


NO WASTED CONCRETE! Rigid Corruform sheets form a tight solid base, save 20% or more in concrete over "flexible type" centerings. No sacrifice in slab design.



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10 **CHOICE OF FINISHES!** Galvanized for exposed ceilings. Uncoated for unexposed.

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Trans-Canada Highway Bridge

Gladstone Overhead in Winnipeg is first bridge in area to use hollow type prestressed precast concrete girders

Seventy percent of this $295,251 contract for the Gladstone Subdivision Overhead in Manitoba, on the Metropolitan Winnipeg by-pass portion of the Trans-Canada Highway, will go for 80 hollow type prestressed precast concrete girders at $2,575 each.

This is the first time this type of girder has been used on a bridge in the area. The award to Peter Leitch Construction Ltd., Winnipeg, by the Department of Public Works, Highway Branch, Winnipeg, was on a low bid 25% above the engineer's estimate, but 5.6% below the high of five bids. Allied Consultants of Canada Ltd., Toronto, are the engineers.

The four span, four lane bridge will have an over-all length of 313 ft and a roadway width of 54 ft.

Concrete for the prestressed girders must attain a compressive strength of 5,000 psi, and that for the substructure a compressive strength of 3,000 psi.

The government furnishes cement, reinforcing steel, corrugated and perforated pipe, catch basin frames, ladder rungs, handrail panels, precast piling and Mercury luminaires with ballasts.

1C Peter Leitch Constr. Ltd., Winnipeg	$295,251
2 Commonwealth Constr. Co. Ltd. Winnipeg	300,087
5 McCaw & MacDonald Ltd	312,634
EE Allied Consultants of Canada, Ltd., Toronto	235,732

Bids: 2-3-59

Items	Unit	Quantity	Unit Prices 1C	2
Extra work	ls	job	$5,000	$5,000
Excavation, above exc line	ls	job	10,872	2,013
below exc line	cy	381	4.70	6.40
Backfill	ls	job	1,977	1,975
Granular backfill	cy	230	5.50	4.55
base course	cy	190	5.20	4.85
Precast piling drive	lf	2,666	2.50	2.55
Load tests, as ordered	ea	1	2,700	2,916
Pile splices, as ordered	ea	10	1.00	1.00
extensions, as ordered	lf	10	1.00	1.00
Augured cast-in-pl concrete piles drill & place	lf	390	12.50	12.00
Concrete, mix & place for pier & abutment footings	cy	359.4	17.50	18.10
abutments & piers	cy	275	66.00	56.00
sidewalks & median	cy	135	38.25	38.00
Heat concrete for heating mix water	cy	634.4	0.20	nb
aggregate	cy	634.4	0.85	nb
& hsing finished structs	cy	634.4	2.00	1.10
Rubbed finish	sf	8,400	0.23	0.37
Drain pipe place	lf	365	0.92	2.10
Reinforcing steel set	lb	119,605	0.02	0.03
Silicone wtrprfg, furn & apply	sf	27,600	0.01	0.01
Electrical equip, furn&instal	ls	job	780.00	650.00
Prestressed girders fe&g	ea	80	2,575	2,750
Bearing pads furn&set	sf	732	11.00	11.00
Precast posts furn&set	ea	64	41.00	24.00
Handrail panels set	lf	539	1.12	1.55
Asph mix furn&place	t	266	9.50	9.50

Commence: 2-26-59 Complete: 6-8-59
fe&g Furnish, erect & grout

Low Bid on Concrete Wins Colorado Highway

The two low bidders for this Aguilar By-pass contract, in Huerfano and Las Animas Counties, were neck and neck on most items, but a low bid of $50.75 a cu yd for 4,075 yd of Class A concrete, $5.25 below the price quoted by the second low for the contract, gave James B. Kenney, Inc., Denver, the 6% overall advantage needed to take the $497,462 contract. The award by the Colorado Dept. of Highways, Denver, was 8.2% below the engineer's estimate. A. F. Copeland, Trinidad, Colo. is resident engineer. Mark U. Watrous, Denver, is chief engineer.

This project to straighten State Highway #1 and by-pass Aguilar to the east, involves 14.586 miles of fencing and structures. Nine major structures will be built over drainage areas, the shortest, 93.6 ft long and the longest, 292.5 ft.

Prevailing wages at March 1 included: carpenter $2.90; crane & shovel operators $3.05; tractor operator $2.90; concrete finisher $3.06; common laborer $2.02-$2.17. All contracts with these crafts expired March 1. New wage contracts are being negotiated.

1C James B. Kenney, Inc., Denver, Colo	$497,462
2 Peter Kiewit Sons Co., Denver	529,726
8 L. H. Kilgore Constr. Co., Denver	608,061
EE A. F. Copeland, Trinidad, Colo	542,031

Bids: 1-29-59

Items	Unit	Quantity	Unit Prices 1C	2
Bridge remov	ls	job	$1,650	$1,500
Row markers remov	ea	6	3.00	3.15
Guard posts remov	ea	4	2.50	2.60
reset	ea	8	2.50	2.60
Culverts plug	ea	2	30.00	31.50
Fence remov	lf	45,000	0.03	0.03
Exc, uncl	cy	79,000	0.20	0.22
struct, misc	cy	160	1.50	1.00
bridges	cy	1,757	2.50	1.75
Structural backfill, cl 1	cy	1,040	2.00	2.00
Compaction	cy	93,000	0.055	0.063
Wetting	Mgal	3,680	0.80	0.80
Overhaul, sta yd	sta yd	199,000	0.005	0.005
yd mi	yd mi	5,500	0.08	0.08
Surfacing detour	cy	810	0.75	0.75
Asph road matl MC, prime	gal	2,000	0.18	0.19
Treated bridge timber	Mbft	0.60	450.00	525.00
Concrete, class A	cy	4,075	50.75	56.00
Steel, reinforcing	lb	884,950	0.12	0.125
structural	lb	431,400	0.175	0.17
Reinf conc culv pipe, 30"	lf	112	9.00	8.40
Stl piling, 10" BP at 42 lb	lf	2,148	4.75	5.40
12" BP at 53 lb	lf	2,873	5.75	6.40
Riprap	cy	2,710	4.75	5.25
Fence, met pl guard, beam type	lf	50	5.00	6.00
barbed wire, met posts	lf	136,800	0.1875	0.19
comb wire, metal posts	lf	2,500	0.38	0.32
Gates, barbed wire	ea	45	22.00	21.00
driveway	ea	1	66.00	52.50
Sheet cooper	lb	21	3.50	2.50
Row markers	ea	62	10.00	11.75
Cattle guards, 16' rdway	ea	2	465.00	525.00
Dr pipe conc ft, 4"x1.5	ea	23	6.00	5.50
4"x2.5	ea	3	10.00	8.25
Elec cond w jct box, 1"	lf	1,123	1.50	1.50
Flared end sect for RCCP, 30"	ea	4	125.00	115.00

Commence: 2-16-59. Complete: 210 cal days
Liquidated damages: $100 day

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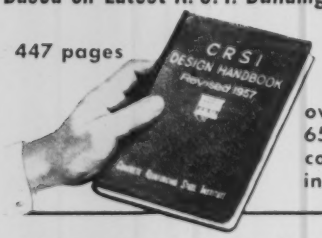

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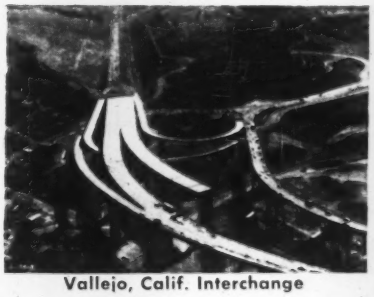

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Chicago-Calumet Skyway

HEAVY-DUTY SCREED SUPPORTS

SCREED CHAIRS

HANGER FRAMES

Coil Hanger Frame

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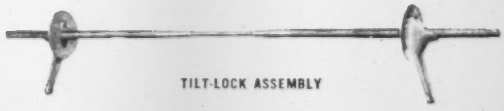
Prescon Hanger

CONE-FAST COIL TIE



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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Mar. 12; Next, Apr. 16
- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 19; Next, Apr. 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 26; Next, Apr. 30
- Wage Rates, Building Board, Lath, Insulation: Last, Apr. 2; Next, Apr. 30

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del.
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.35a	$3.95a	$3.60a	$3.10e	$3.10e	$1.85‡e	$2.18e	$2.33e	$1.65e	$1.75e	$0.175o	$0.210	$13.75g
Baltimore	4.32a	3.91a	3.46a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	18a	18a	13.50m
Birmingham	4.23c	3.30cf		2.53ns	2.53ns	2.13ns	2.75e	2.75e	1.55d	1.65d	18	18	13.55q
Boston	5.80rp	4.52ap	4.80rmp	3.00qsz	3.00qsz	3.00qsz	1.75qsz	1.85qsz			23ao	27.5ao	15.00q
Chicago	4.13ag	3.87ag	3.90 3.95g	3.78‡e	3.78‡e	4.13‡be	3.95‡be	3.95‡be	2.25‡e	2.25‡e	25‡e	25‡be	13.50e
Cincinnati	4.68e	4.16e	4.18e	2.29‡eu	2.34‡eu	2.34‡eu	2.64‡eu	2.64‡eu	1.89u	1.89u	19o	24ao	13.25qr
Cleveland	1.25		3.89‡ae	2.25ae	2.10ae	1.75ae	2.80‡y	2.80‡y	3.45‡f	3.45‡f		22‡f	15.50x
Dallas	3.75a	3.25a	3.65a	2.65‡a	2.75‡a	1.90‡	2.43	2.63				27	12.50z
Denver	4.79a	4.29a	4.79	1.90‡	2.10‡	1.37‡b		3.35‡z			22	27ao	11.90
Detroit	4.25a	3.74aqg	3.72a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.47aqaa	2.47aqaa	22p	25‡ap	13.50e
Kansas City	4.23a	3.83a	4.10a			1.70‡a	2.00‡a	2.00‡a			22a	26c	13.50
Los Angeles‡	5.12rh	4.68rh	5.60c	2.56‡at	2.76‡at	2.41‡at	2.41‡at	2.46‡at			17fm	28.5m	12.45klz
Minneapolis	4.52a	4.11a	4.08a	2.70‡ae	2.70‡ae	1.90‡ae	3.95‡ae	3.95‡ae			19g		14.30f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡at	2.15‡at	2.40‡a	1.90‡t	2.15‡t	2.00t	2.00t	20‡	28‡t	10.80e‡t
New Orleans	4.06b	3.65b	3.85b	2.45b	2.45b	2.06b‡			1.65d	1.75d	27.5r		14.00o
New York	4.76a	4.25a	3.80			3.20bk	3.30bk	3.10bl			26.5nw	32.5nw	17.60a
Philadelphia	4.57‡ae	4.16‡ae	3.76‡e	2.85‡a	2.85‡a	2.35‡a	2.70‡a	2.80‡a	2.20‡a	2.20‡a	25/32		14.15d
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.68‡aqs	2.68‡aqs	3.08‡aqs	2.00‡aqs	2.00‡aqs	2.20se	2.20se	26r	26r	15.80o
St. Louis‡	4.16 4.48a	3.76 4.08a	3.86 4.18a	3.25‡ae	3.10‡ae	2.10 3.10‡ae	1.65‡s	1.75‡s			24‡a	30‡eo	12.65 13.15q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17			24	28.5cl	13.00cqr
Seattle	4.22‡a	3.60aq	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm			26s	37.5e	13.90‡
Toronto	4.00n	3.81d	4.00n	2.40	2.40	2.05	2.40	2.40	2.40	2.40	26	27.5cu	13.75e

‡ Delivered. * Prices incl. dealers discount except as noted. ◊ Add 4% sales tax. ◊◊ Add 2% intrastate sales tax. R Revised (eff. 3-1-57). † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 160 bag lots. •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-8 ton truckload. •q F.o.b. mill

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 15 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch charge. •y F.o.b. dock. •z 5-8 tons. •aa Less 5% disc. 15 days.

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete. •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •h F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 18. •u Less 5% disc. 10 days. •v Less 12% disc. 15th. •w Eff. 1-1-57.

READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10-100 cy. •d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 2,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2½:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del. +50¢. •w 10-100 cy. •x Del in zone 20-B.

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45¢	Buffington, Ind	$3.40¢	Steelton, Minn	$3.45¢	Muskegon, Mich	$3.45¢	Toledo, O	$3.45¢
Clinchfield, Ga	3.45¢	Independence, Kan	3.25¢	Leeds, Ala	3.30¢	Saginaw, Mich	3.45¢	Milwaukee, Wis	3.50¢
Kingsport, Tenn	3.45¢	Hannibal, Mo	3.35¢	Duluth, Minn	3.45¢	Wyandotte, Mich	3.45¢	Green Bay, Wis	3.50¢
West Des Moines, Iowa	3.50¢	Northampton, Pa	3.50¢	Hudson, N. Y.	3.50¢	Buffalo, N. Y	3.55¢	Ironton, O	3.45¢
Nazareth, Pa	3.50¢	Universal, Pa	3.60¢	Alpena, Mich	3.35¢	Oswego, N. Y	3.60¢	Montreal City	2.58†
Bath, Pa	3.50¢	Waco, Tex. (+10¢ tax)	3.35¢	Detroit, Mich	3.45¢	Cleveland, O	3.50¢	W. Winfield, Pa	3.60¢
Lesley, Pa	3.50¢	Giant, S. C	3.45¢	Howes Cave, N. Y	3.50¢	Alsen, N. Y.	3.50¢	Security, Md	3.50¢

† *Price to hold for first quarter of 1959.* ¢ *Price guaranteed through December 31, 1959.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8‡ in. carload lots	Wood per sq. yd. 3‡ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$26.60PS	$45.00PS	$0.11PS	$0.235S	$0.12uS	$0.235uS	$0.12S	$0.11S	$0.235S
Baltimore	150.00			23.00t		095t	0.185t	10utE	19utE	10t	105t	0.195t
Birmingham		66.00s		25.12	25.69O	1069	0.1093O	1162	1188O	1006O	1069	0.1093O
Boston				22.00atS	46.00atS	22.00atS	46.00atS	105avcF	24avcF	14aOR	150R	
Chicago	150.00‡a	90.00‡ab	3.95 4.00‡at	22.00b	32.00b	20.40bt	30.40bt	10bucH	15bucH	08b		
Cincinnati				26.00St				1165uSU				
Cleveland		89.50‡dq	6.30q	26.00tA		26.00tA		1165tcAF			1265tAG	21AG
Dallas	c	40.80p	c	26.82	46.20	1138	1983	30.45	52.40	1100	1138	1983
Denver		62.00a										
Detroit		116.00		30.50		30.38t		13.28uI		1133		28
Kansas City	c	c	c	18.00cf		18.00ct		.0825cueJ		079c	0.125c	
Los Angeles	c		c	21.50dmz		21.50dtz		23.00dK		22.00dtaa	23.90‡Xt	26.30‡Xt
Minneapolis			3.73A	26.00		26.00t		0.115te		0.105	1366	
Montreal	c	c	c	32.50n	59.80n	176n	226n	18.70nuE	23.70nuE	154n	242n	27nX
New Orleans				20.00e		20.00et		.095ete		085eB	095eBL	1905eB
New York			3.70‡	20.99m	42.94m	20.99et	40.94et	9.61uF	19.01uF		9.68u	19.11u
Philadelphia	175.185	110.120	4.06	18.21U		20.21U		0.085-10FU		0.085-10U		
Pittsburgh	60.00‡	95.00n	6.35n	31.20us		31.20usS		1403‡S		142S	1403s	
St. Louis				19.74t		18.25t		8.93fe	9.18fe	0.165fe	18.25O	8.25O
San Francisco		70.00		23.50gkld	42.00gkld	23.50gkld	42.00gkld	24.50gNdd	43.00gNdd	24.25grWdd	24.50grXdd	2022grXdd
Seattle				25.00z	40.00A	25.50tzze		26.50KE		24.25hrY	23.50teX	45.10teX
Toronto		148.50‡	4.50‡	40.45	53.81ze	0.2145	0.2505ze	0.22ze	0.264zee	0.204	0.216Zee	271Zee

‡ Delivered. ◊ Add 4% sales tax. ◊◊ Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3¼ x 8. •c 2¼ x 8¼ x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb. tr. •g Less $1 M disc. 15th. •h 2" tr. 8 lb. •j 3 x 3⅝ x 8‡. •j 2¼", 6 lb. tr. •k Used. •l Redshale. •m Pine; oak $6.57. •n Truck del. •o Less $1 M disc. 15 days. •p Used: $40; new: $80.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40-300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150-300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS, SS. •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truckload. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •dd less disc of $1 ton. •ee 45 Imp. gal. drums

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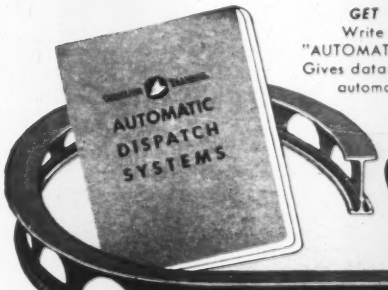

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CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† N. H., New Boston—TRACKING and DATA ACQUISITION STATION: BA On Or About 4-28. U. S. Eng., 424 Trapelo Rd., Waltham, Mass., tracking and data acquisition station, Air Force Bombing Range, ENG-19-016-59-117. $2,500,000-$3,000,000. CD 3-25.

HEAVY CONSTRUCTION—LB & CA

▲ MAINE—State Hy. Comn., Augusta:
Ciancchette Bros., Inc., Pittsfield, Me., CA $1,304,946 (11 bidders), Messalonskee Stream Bridge, City of Waterville, Interstate Proj. I-95-6-2(123)-, Part 2, Kennebec Co. Bids Mar. 25. CD 3-2.

▲† Nat. Harrison, 5137 N.E. 2nd Ave., Miami, Fla., CA $10,144,000, radiation sys., Naval Radio station, Washington Co., JONESPORT, ME. Dist. Pr. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Continental Electronics Mfg. Co., 431 South Station, Boston, Mass., engr. CD 3/18, under LB.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. Pr. Wks., 100 Nashua St., Boston:
Mass.—M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., CA $4,549,558, est. $5,014,531, state hy. and bridge, Rte. 3, FA Proj. F-315-(9), Chelmsford-Westford Tyngsboro.
Mass.—Central Constr. Co. & Henley-Lundgren Co., 193 Hartford Pike, Shrewsbury, Mass., joint venture), CA $2,032,537, est. $2,530,054, hy. and bridge, Interstate Rte. W95, 1 W-94-6(8)-67, Chelmsford. Bids Mar. 1. CD 3-5, under LB.

▲ C. J. Maney Co., Inc., 173 Bedford St., Lexington, Mass., LB $1,069,000, est. $1,500,000, municipal incinerator, SOMERVILLE, MASS. City, Pr. Wks. Dpt., Somerville, Mass. Bids Mar. 20. CD 3-10.

BUILDINGS—LB & CA

▲ George A. Fuller Co., 597 Madison Ave., New York, N. Y., CA Est. $6,000,000, excavation and foundation for 52 story PRUDENTIAL CENTER BLDG., BOSTON, MASS., Prudential Insurance Co. of America, 763 Broad St., Newark, N. J. Bids Mar. 20. CD 3-3.
American Bridge Div. U. S. Steel Corp., 525 William Penn Pl., Pittsburgh, Pa., CA steel for 52 story Prudential Center Bldg., Boston, Mass.

▲ Green Manor Constr. Co., Inc., 382 W. Middle Turnpike, Manchester, Conn., CA $3,200,000, Regional SHOPPING CENTER, "Bloomfield Shopping Parkade," Blue Hill Ave., BLOOMFIELD, CONN. Green Manor Estates, Inc., 382 W. Middle Turnpike, Manchester, Conn., Bradlees, Inc., New London, Conn., lessee of 60,000 sq. ft. dept. store. Philip J. DiCorcia, 376 W. Middle Turnpike, Manchester, Conn., archt. Awarded Mar. 26. CD 7-13-56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ Diamond Constr. Co., P.O. Box 647, Savannah, Ga., LB $1,864,174, channel piers for Washington Channel Bridge, WASH., D.C. D. C. Government Dpt. Hys., 299 Pa. Ave., N. W., Wash., D. C. Bids Mar. 27. CD 3-4.

BUILDINGS—LB & CA

▲ B. J. Lucarelli Co., Inc., 22 Orchard St., Jersey City, N. J., CA $2,700,000, SCHOOL, ORANGSBURG, N. Y., Bd. Educ., Orangeburg, N. Y., Reginald E. Marsh & Assoc., 101 Park Ave., New York, N. Y., archts. Bids Feb. 3.

▲ Michael Forte, c/o Syosset Industrial Builders, owner, 44 Clearwater Dr., Plainview, N. Y., CA Est. $3,500,000, HOSPITAL and PROFESSIONAL BLDG., on Jericho Turnpike on S. Ave. tract, SYOSSET, N. Y., Siegmund Spiegel, 200 E. Front St., East Meadow, N. Y., archt.

▲ Larson Constr. Co., 255 Mt. Lebanon Blvd., Pittsburgh, Pa., CA $1,896,000, est. $2,525,000, 30 CLASSROOMS, 4 SCIENCE ROOMS, 2 BUSINESS EDUCATION ROOMS, ART ROOM, 2 SHOP, MUSIC, GYM, CAFETERIA, HOMESTEAD, PA., West Mifflin School Dist., Homestead, Pa., Hunter, Campbell & Reed, 1601 5th Ave., Altoona, Pa., archts. CD 9-27-57.

St. Joseph's College, 54th St. and City Line Ave., Phila., Pa., rejected bids for COLLEGE CLASSROOM, PHILA., PA., Est. $990,000. CD 3-3.

SOUTH

HEAVY CONSTRUCTION—BA

▲† Georgia—BA About 5-18—U. S. Eng., 200 East St. Julian St., Savannah, 1,400,000 cu. yd. maintenance dredgeng Atlanta Intracoastal Waterway, between Calibogue Sound and St. Andrew Sound on Intracoastal Waterway, Savannah Dist., CIVENG-09-133-59-45.

BUILDINGS—BA

▲† Virginia—LAUNCHING FACILITIES—BA 4-16—Procurement Office, Langley Research Center, Langley, Lunching facilities expansion, Wallops Island. Daniel Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, Calif., archts.-engrs. CD 3-11.

HEAVY CONSTRUCTION—LB & CA

▲ FLORIDA—State Rd. Dpt., Tallahassee:
Fla.—H. E. Wolfe Constr. Co., Box 1361 St. Augustine, Fla., CA $966,388, four-lane divided B12 in. limerock base Type 1 B, conc. surf., course and binder course, 2 concrete box culverts 6.228 mi. SR 20 (US 19 and 27) between 0.5 mi. south of Taylor Co. line and Aucilla River, FAP f-016-2 (17), Duval Co.;
Fla.—Smith Eng. & Constr. Co., Drawer 1831, Pensacola, Fla., CA $671,588 B conc. surf. binder course 7.215 mi., SR 95 (US 29) Job No. 48060-3203, Fed. Aid Proj. No. F-001-(6) (E) Escambia Co. Bids Jan. 29, Awarded Mar. 24. CD 2-3, under LB.

▲ MISSISSIPPI—State Hy. Comn., Jackson:
Miss.—Mid State Paving Co., P. O. Box 1454, Meridian, Miss., CA $208,828, est. $210,736, lime and cement treated sub-grade, alternate types of base 4.971 mi., Mississippi Hy. 450 between Choctaw and Scott, Proj. S-0611 (4) A Contr. 1, Bolivar Co.;
Miss.—M. & W. Constr. Co., P. O. Box 388, Tupelo, Miss., CA $1,037,173, est. $1,304,617, grade, drain, culverts 4.481 mi. Interstate Hy. No. 59 between Meridian and Alabama line, Proj. I-IN-095-2 (6) (old) I-IN-59-3 (4) 158 (new) Contr. I, Lauderdale Co.;
Miss.—Bowyer Johnson Constr. Co., Crook Bldg., Jackson, Miss., CA $235,266, est. $269,374, grade, drain 10.139 mi. Mississippi Hy. 13 between Forkville and Lena, Proj. S-0322 (4) A Scott and Leake Counties;
Miss.—John H. Moon & Sons, P. O. Box 382, Ridgeland, Miss., CA $757,432, est. $989,443, grade, drain, culverts and box bridge 6.441 mi. local road crossings, Interstate Hy. 55 between Hinds Co. line and Gluckstadt, Proj. I-091-2 (16) (old) I-55-2 (17) 03 (new) Contr. 1, Madison Co.; CA $297,341, grade, drain, culverts, bridge 0.849 mi. US Hy. 84 between Eddiceton and Quentin, Proj. F-051-I-(7), Franklin Co.;
Miss.—Boyd Constr. Co., Grenada, Miss., CA $367,450, 2.87 mi. topping along Interstate 55 between Grenada and Tillatoba, Proj. 091-3, Contr. 1, Grenada Co.;
Miss.—J. C. McBeath, 1000 Miss. St., Jackson, Miss., CA $1,068,066, est. $1,310,338, grade, drain, culverts, box bridges 7.29 mi. Mississippi Hy. 27 crossing, Interstate Rte. 55 between Crystal Springs and Terry, Proj. I-091-1 (8) (old) I-55-1 (8) 69 (new) Contr. 1, Copiah and Hinds Counties;
Miss.—T. G. Strowhorn Constr. Co., Fulton, Miss., CA $175,106, grade, drain, culverts 4.261 mi. Mississippi Hy. 12 between James and Hollandale, Proj. F-018-1 (5), Washington Co.;
Miss.—Raley Constr. Co., Inc., Aberdeen, Miss., CA $243,593, grade, drain, culverts, box bridges 1.425 mi. Mississippi Rte. 14 between Mason and Alabama line, Proj. F-015-Nokubee Co.;
Miss.—Delta Constr. Co., P. O. Box 1066, Jackson, Miss., CA $921,308, grade, drain, culverts 3.551 mi. US Hy. 49 between Florence and Junction with US Hy. 80, Proj. F-008-3 (6), Contr. 1, Rankin Co.;
Miss.—Clarke Bros. Co., 309 S. Jefferson Ave., Peoria, Ill., CA $750,477, grade, drain 9.932 mi. US Hy. 49 between Brooklyn and Hattiesburg, Proj. F-008-1, Forrest Co. Grand total $6,062,040. Bids Mar. 24. CD 3-13.

▲† English Electric Export & Trading Co., Ltd., 23 Beaver, New York, N. Y., LB $4,564,746 (6 bidders), generators for Barkley Hydroelectric Power Plant, right bank of Cumberland River 1.3 mi. north of Eureka and 5 mi. southwest of Kuttawa, Barkley Proj., Livingston Co., CIVENG-40-058-59-9, KENTUCKY and TENNESSEE. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids Mar. 26. CD 3/11.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort:
Codell Constr. Co., Winchester, Ky., CA $1,889,633, grade, drain, surf., 5.006 mi. Louisville-Lexington Rd. 500 ft. east Seven Mile Pike extending southeasterly 1.64-3 (7) 35.SP.106-806, Shelby Co. Bids Feb. 6. CD 2/11, under LB.

BUILDINGS—LB & CA

Frank H. Conner Co., 711 S. Tryon, Charlotte, N. C., LB $964,500 HOSPITAL, BANNER ELK, N. C. Grace Hartley Memorial Hospital, Banner Elk, N. C., Bids Mar. 12. CD 2/18.

MIDDLE WEST

BUILDINGS—BA

▲ Ill., Decatur—RESIDENCE HALL—BA 4-23—Millikin University, Decatur, 43,700 sq. ft., reinf. conc. residence hall for men, Student Center. $1,200,000. Harris, Spangler, Beall & Salogga, 400 Standard Office Bldg., archts. CD 3-14-57.

HEAVY CONSTRUCTION—LB & CA

▲ Emil Marcelletti & Sons, 25 W. Monroe, Bedford, O., CA $1,238,784, Contr. 2, Lake Shore Blvd. Trunk Sewer, EUCLID, O., City, City Hall, 585 E. 222 St., Cleveland 23, O. Bids Jan. 26. CD 2/3, under LB.

▲ ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,
rejected bids Mar. 13, base course wid'n, Ill. 15 northwest of Bluford to Wayne City, Jefferson and Wayne Counties, LB $999,790; paving, resurf., US-45, city of Metropolis, Monroe Co., LB $588,828. CD 3-17, under LB.

▲ MICHIGAN—State Hy. Dpt., Mason Bldg., Lansing, Mich.—Julius Porath & Son Co., 12201 Beech Daly, Detroit 39, Mich. and Sugden & Sivier, Inc., 13100 Cloverdale, Oak Park, Mich., CA $578,506, 0.4 mi. paving and ramps, constr. and relocation city lighting power and signal facilities from 3rd Ave. to Griswold Ave. Lodge Expressway;
Mich.—Holloway Constr. Co., 29350 Joy, Livonia, Mich., CA $1,270,140, 10.9 mi. 24 ft. concrete roadway, US 23 from M-59 north to connection with Fenton-Clio Expressway at Livingstone-Genesee County Line, Livingston Co. Bids Feb. 7. CD 2/13, under LB.

BUILDINGS—LB & CA

▲ Miller-Davis Co., 38 S. Dearborn St., Chicago 3, Ill., CA $1,000,000, 1 story, 165,000 sq. ft. steel, CORRUGATED PAPER FACTORY, BRIDGEVIEW, Ill., Ajax Box, Div. of St. Regis Paper Co., 2220 S. Wright Ave., Chicago, Ill. Awarded Mar. 21.

▲ Kroening Eng. Corp., 4500 W. Mitchell St., Milwaukee, Wis., CA Est. $1,434,870, general contract, Whitman JUNIOR HIGH SCHOOL, WAUWATOSA, Wis., Bd. Educ., 1732 Wauwatosa Ave., Wauwatosa, Wis. Bids Mar. 3, awarded Mar. 25. CD 3-9, under LB.

▲ Miller-Davis Co., 1029 Portage, Kalamazoo, Mich., CA $1,419,500, STUDENT CENTER, Central Michigan College, MOUNT PLEASANT, MICH., State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich., Roger A. Ver & Assoc., 1126 McKay Bldg., Grand Rapids, Mich., archts. CD 12-29-58.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ Mo., St. Louis—RUNWAY IMPRVS.—BA 4-28—Bd. P. Service, 304 City Hall, Zone 3, 1,600 ft. extension, northeast-southeast runway, etc., Lambert-St. Louis Municipal Airport, $1,300,000, Horner & Smith, Shell Bldg., 1221 Locust St., Zone 3, engrs. CD 3-18.

BUILDINGS—BA

▲ Colo., Greeley—PLANT—BA 4-21—Greeley Capitol Packing Co., c/o Denver Office, 500 Clarkson, Denver, 1 story, bsmt., 80 to 100,000 sq. ft. packing plant, $1,000,000. Nat S. Sachter, 4950 East Evans Ave.,

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

Denver, archt., Riley Engineering Corp., 810 23 St., Denver, engrs. CD 11/19.

BUILDINGS—SLC

▲ **Mo., St. Louis County**—PLANT—Gereke-Allen Carton Co., 5101 Penrose St., St. Louis 15, Mo., (Subsidiary Weyerhaeuser Timber Co., Longview, Wash.), soon lets contract, 1 story, 120,000 sq. ft. masonry, concrete, timber paper box plant, Page and Warson Rd. in Lindbergh-Warson Industrial Center. Over $1,000,000. CD 11/10.

HEAVY CONSTRUCTION—LB & CA

▲ **KANSAS**—State Hy. Comn., Hutchinson.
Clarkson Constr. Co., Box 4924, Station F, Kansas City 1, Mo., CA $1,009,996, grading 4.109 mi. SP 235-87 I 235-1 (15) 49 Pt. III, Sedgwick Co. Bids Feb. 5. CD 2/13, under LB.

▲ **TEXAS**—State Hy. Comn., Austin.
Tex.—**Harry Newton, Inc. and Brown & Balkney, Inc.**, Graham Land Office Bldg., Graham, Tex., CA $1,004,135, grade, structures, 9.753 mi. Hy. St. 26, Proj. F 642 (5) FG 642 (6), Gregg Co.;
Tex.—**Bridge Eng. Corp.**, Box 512, Houston, Tex., CA $524,637, grade, structures, concrete pavement, 0.387 mi. Hy. U.S. 90A, Proj. U 512 (28), Harris Co. Bids Mar. 21. CD 3/27, under LB.

▲ **TEXAS**—State Hy. Comn., Austin.
Tex.—**H. B. Zachry Co.**, P. O. Box 10188, San Antonio, Tex., CA $2,666,666, flex. base, hot mix b. conc. 17.455 mi. Hy. I 10, Proj. I 10-1 (122) 32, El Paso Co.;
Tex.—**Flenniken Constr. Co., Inc.**, Box 6857, Dallas, Tex., CA $1,108,928, foundation course, concrete pavement 2.924 mi. Hy. I 35, Proj. I 35-7 (4) 488, Cooke Co.;
Tex.—**F&C Engineering Co.**, Box 2426, Houston, Tex., CA $1,238,356, cement stab. base, concrete pavement, etc. 0.986 mi. Hy. I 610, Proj. I 610-7 (19) 808, Harris Co. Grand total $5,013,950. CD 3/30, under LB.

▲ **TEXAS**—State Hy. Comn., Austin.
Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., CA $1,658,959, grading, structures 6.003 mi. Hy. I 45, Proj. I 45-2 (5) 102, Walker Co.;
Tex.—**Adams Bros., Athens, Tex., R. N. Adams Constr. Co., Kaufman, Tex.** and **T. L. James & Co., Inc.**, Ruston, La., CA $1,912,443, concrete pavement, flex. base, 2 course surf. treat. 7.21 mi. Hy. I 30, Proj. I 30-2 (6) 66, Hopkins Co. Bids Mar. 21. CD 3/27, under LB.

▲ **TEXAS**—State Hy. Comn., Austin.
Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex., CA $1,427,001, flex. base, hot mix b. conc. 2.251 mi. Hy. Loop 13, Proj. U 1075 (13) & 1075 (16), Bexar Co.;
Tex.—**Uvalde Constr. Co.**, High Line Dr. and Industrial St., Dallas, Tex., and **Joe Davidson**, Terrell, Tex., CA $576,459, flex. base, hot mix b. conc.; concrete paving 3.607 mi. Hy. U.S. 80, Proj. F 130 (12), Kaufman Co.;
Tex.—**J. W. Perry & C. H. Allison Constr. Co.**, Rte. 8, Box 308, San Antonio, Tex., CA $578,703, seal coat 506.393 mi. Hys. U.S. 84, etc., Proj. C 52-7-25, etc., Lubbock Co., etc.;
Tex.—**Cooper & Woodruff**, P. O. Box 1082, Amarillo, Tex., CA $808,160, flex. base, hot mix b. conc. 14.336 mi. Hy. U.S. 287, Proj. F 438 (12), etc., Hall Co.;
Tex.—**Flenniken Constr. Co. and J. G. Nelson & H. L. Larson**, 5603 Maple St., Dallas, Tex., CA $2,099,520, concrete paving 3.186 mi. Hy. U.S. 75, Proj. F 539 (18) & U 539 (19), Grayson Co.;
Tex.—**Reynolds & Huff and R. B. Butler, Inc.**, Tyler, Tex., CA $598,934, flex. base, b. conc. 2.347 mi. Hy. St. 31, Proj. U 693 (1) & F 693 (2), Smith Co. Grand total $6,088,777. Bids Mar. 20. CD 3/30, under LB.

BUILDINGS—LB & CA

▲ **Bor-Son Constr. Co.**, 1209 West 78½ St., Minneapolis, Minn., CA $1,261,000, general contract STUDENT CENTER and ADMINISTRATION BLDG., NORTHFIELD, MINN., St. Olaf College, Northfield, Minn. Bids Mar. 3. CD 3/9, under LB;
Holm Bros., Atwater, Minn., CA $416,940, combined bid, mechanical work Student Center and Administration Bldg., St. Olaf College (Northfield, Minn.).
▲ **L. R. Foy Constr. Co., Inc.**, 234 E. 4th St., Hutchinson, Kan., CA $1,811,032, HIGH SCHOOL, HUTCHINSON, KAN., Bd. Educ. School Dist. No. 1, Hutchinson, Kan. Bids Mar. 20. CD 3/16.
▲ **Brown & Root, Inc.**, P.O. Box 3, Houston, Tex. CA Est. $5,500,000, PLANT addn. to produce esters and alcohols, 100 million lbs. capacity, SEADRIFT, TEX., Union Carbide & Chemical Co., Seadrift, Tex. CD 10/5/56.
▲† **T. C. Bateson**, 6800 Denton Dr., Dallas, Tex. LB $5,186,800 (10 bidders), 349 unit CAPEHART HOUSING, FORT SILL, OKLA., U.S. Eng., Box 61, Tulsa, Okla. Bids about Mar. 31. CD 3/18.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 4-28—U.S. Eng., 751 S. Figueroa St., Los Angeles, levee, channel constr., Santa Clara River, near El Rio, Ventura Co., ENG-04-353-59-33, $2,000,000. CD 9/23.

BUILDINGS—BA

▲ **Calif., San Pedro**—HOSPITAL—BA 4/23—Project Architects, archts., 3460 Wilshire Blvd., Los Angeles, 4 story hospital for Trustees, San Pedro Community Hospital, $1,900,000. CD 1/16, under LB.
▲ **Idaho, Boise**—OFFICE—BA 5/1—State Hy. Dpt., 3 story, 96,000 sq. ft. highway dpt. office, $2,000,000. Hummel, Hummel & Jones, 1324 Idaho St., and Wayland & Cline, Idaho Bldg., archts. CD 7/3.

HEAVY CONSTRUCTION—LB & CA

▲† **Baker & Ford Constr. Co.**, 811 17 St., Bellingham, Wash., LB $3,666,499, COMPOSITE BLDG., Clear Air Force Station, Inv. 59-60, CLEAR, ALASKA, U.S. Eng., P.O. Box 7002, Anchorage, Alaska. Bids Mar. 26. CD 2/10, under Public Bldgs.
▲ **IDAHO**—State Hy. Dpt., Boise. Bids opened 3/24.
Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, LB $2,171,751, 4-lane divided roadway, drainage structures, plant mix bit. surf., 162 ft. concrete underpass, 90 ft. twin bridge on 4.317 mi. Interstate No. 90, Kootenai Co. CD 3/5.
CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento.
Fredrickson & Watson Constr. Co. & Ransome Co., 873 81st Ave., Oakland, Calif., CA $975,624, grading, surf. to constr. 1.6 mi. 4 lane freeway, Warren Blvd. (State Hy. Rte. 227) between Lincoln Ave. and 0.6 mi. south of Carson St. IV-Ala-227, Oak., Alameda Co. Bids Mar. 18, awarded Mar. 27. CD 3/24, under LB.
▲† **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif., LB $1,366,573 (8 bidders), impry. East Twin and War Creeks Channel, Pacific Electric Railway Bridge to Central Ave., Santa Ana River Basin, San Bernardino, ENG-04-353-59-26, CALIFORNIA, U.S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 24. CD 2/24.
▲† **Hydraulic Dredging Co., Ltd.**, 1221 Central Bldg., Oakland, Calif., CA $4,145,800, 9.1 mi. section Sacramento Deep Water Channel, dredging 21,610,000 cu. yd. material, Yolo Co., Spec. 2534, ENG-04-167-59-62, CALIFORNIA, U.S. Eng., 1209 8th St., Sacramento, Calif. Bids Mar. 20. CD 3/24, under LB.
▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened 3/26.
Peter Kiewit Sons' Co., 345 Kiewits Ave., Arcadia, Calif., LB $9,725,920 (3 bidders) extensive East Los Angeles Interchange at Jct. of Santa Monica, Santa Ana and Golden State Freeways, incl. 28 bridges, substructure work on 2 addnl. bridges, revision of existing structures, erection 17 concrete retaining walls and grading, paving 2 mi. interchange roadways, VII-LA-173, 2.4-LA., Los Angeles Co. CD 2/11.
▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento.
Fredrickson & Watson Constr. Co., 873 81st Ave., Oakland, Calif., CA $1,532,222, 3.3 mi. 4 lane expressway Sign Rte. 17 between 0.2 mi. north of Santa Cruz and Glen Canyon Rd. at Scott Valley, incl. traffic separation bridge over expressway, interchange facilities at Pasatiempo, structure to carry expressway over Bethan Park Dr., frontage roads and fill and arch culvert at Carcabero Creek, Santa Cruz Co. Bids Mar. 4, awarded Mar. 25. CD 3/6, under LB.
▲ **N. A. Artukovich Constr. Co.**, 723 Union St., Montebello, Calif., LB $1,846,921 (10 bidders) Miller-Holder Trunk Sewer, Contr. 3-3, consisting 27,810 lf. plastic lined rein.-con. pipe, SANTA ANA, CALIF., Orange County Sanitation Dist. No. 3, 1104 W. 8th St., Santa Ana, Calif. Bids Mar. 25. CD 3/3.

BUILDINGS—LB & CA

† **Jensen-Rasmussen & Co.**, 4302 E. 130th St., Box 89, Sunnyside, Wash., LB $934,850 (9 bidders) bldg. addn. to METALLURGICAL DEVELOPMENT FACILITY in 300 area at Hanford Works, RICHLAND, WASH., Atomic Energy Comn., Hanford Operations Office, P.O. Box 550, Richland, Wash. Bids Mar. 26. CD 2/27.
Affiliated Engineers & Contractors, Inc. & H. K. Ferguson, P. O. Box 218, Florin, Calif., LB $965,000 (8 bidders), test stands shop and ignited complex, and site development, SOLID ROCKET PLANT, Spec. 5640, NIMBUS, CALIF., Aerojet-General Corp., Archt. Engr. Div., P. O. Box 1947, Sacramento, Calif.

CANADA

BUILDINGS—LB & CA

▲ **P. A. L'Ecuyer Co. Ltd.**, 1187 First St., Val d'Or, Que., CA Est. $1,500,000, LOCAL MINE STRUCTURE, mill bldg., head frame, shaft house, hoist room, crusher house, CHIBOUGAMAU, QUE., Copper Rand Chibougamau Mines Ltd., 55 Yonge St., Toronto, Ont.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

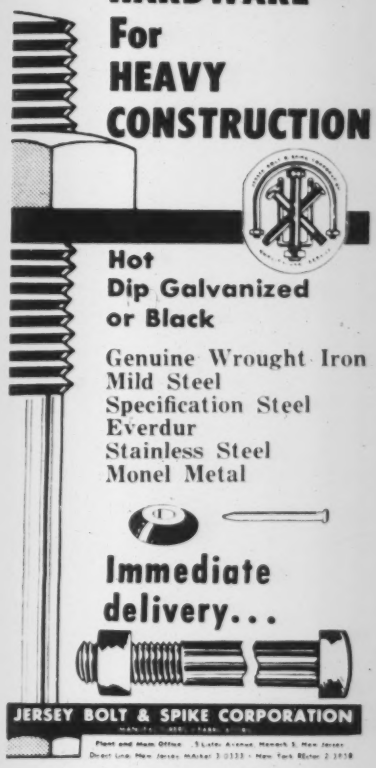
▲ **N. Y., Endicott**—Village sanitary sewerage sys. and treatment plant, $4,200,000. (State Aid Planning Funds Allotted).
▲ **N. Y., Roslyn**—Town of North Hempstead, Manhasset, N. Y., $3,600,000 bond election Apr. 18, incinerator. CD 3/6/57, under N. Y., North Hempstead.

BRIDGES

▲ **ALABAMA**—State Hy. Dpt., Montgomery.
Madison Co., overpass, Governors Drive and Memorial Parkway, FAI Proj., $1,500,000.
▲ **N. Y., Buffalo**—City, City Hall, vertical lift bridge Michigan Ave., $5,000,000. McFarland & Johnson, 333 Front St., Binghamton, consult. engrs. CD 1/30.
▲ **O., Lorain**—City, City Hall, elimination 11 grade crossings on Nickel Plate Road, $5,765,000. Harley-Ellington & Day, 135 E. Elizabeth, Detroit, Mich., engrs.

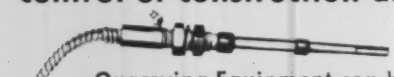
STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford.
Fairfield Co.—extend Route 110 from Route 111 to Rte. 59, $4,000,000.



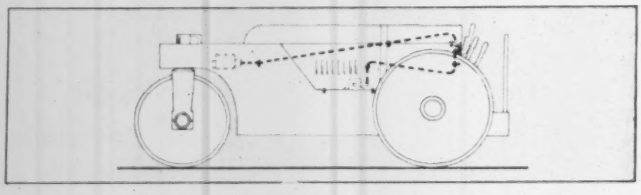
TRU-LAY *PUSH*-PULLS

give trouble-free, lifetime service for remote control of construction and quarrying equipment

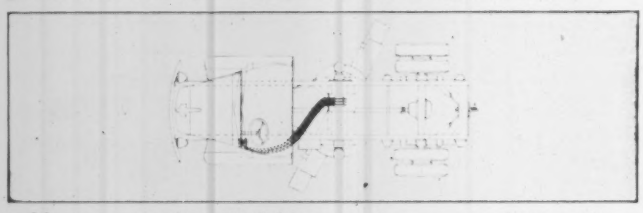


Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

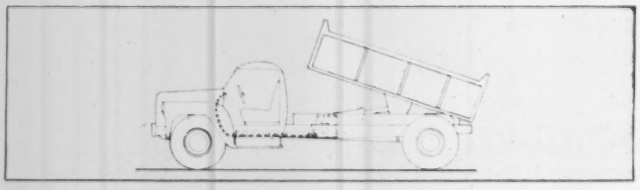
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156" long, is capable of a 2" stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

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▲ NEW YORK—Bureau Contracts & Accounts, State Office Bldg., Albany,
Richmond Co.—8 mi. West Shore Expressway, paralleling Arthur Kill, from Richmond Parkway at Outerbridge Crossing to proposed Clove Rd. Expressway at Goethals Bridge, Staten Island. $30,000,000. Seelye Stevenson Value & Knecht, 101 Park Ave., New York 17, N. Y., consult. engrs. CD 8-29-57.

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,
Delaware Co.—reconstr. 11 mi. Rte. 10 between Walton and Delhi, FAI Proj., $2,500,000,
Sullivan Co.—reconstr. work on Parksville By-pass section Rte. 17, FAI Proj., $300,000,
Westchester Co.—reconstr. 2½ mi. section Rte. 9 in Croton Area, FAI Proj., $3,000,000.

▲ Ont., Toronto—Municipality of Metropolitan Toronto, 67 Adelaide St. E., four to six lanes, street widen Avenue Rd. between Bloor St. W. and St. Clair Ave. W., reconstr. Canadian Pacific Ry. overpass north of Dupont St., retaining wall east side of Avenue Rd. hill, $2,900,000. Proctor & Redfern, 75 Eglinton Ave. E., consult. engr. for railway overpass. CD 11-19-56.

EARTHWORK, WATERWAYS

▲ Tex., Beaumont—Texas Gulf Sulphur Co., 811 Rusk Ave., Houston, Zone 2, dredging 3,600 lin. ft. canal, 36 ft. deep, Neches River, dredging, turning basin, Marine Terminal, south of here, $3,000,000. Brown & Root, Eng. Div., 35 Japhet St., Houston, consult. engrs.

AIRPORTS

▲† Colo., Colorado Springs—OPERATIONS CENTER—Dpt. Defense, Pentagon, Wash. 25, D. C., North American Air Defense Combat Operations Center at Cheyenne Mountain, near here, $10,000,000.

▲ Mo., St. Louis—AIRPORT IMPRVS.—City, Bd. P. Service, 304 City Hall, Zone 3, bond election Apr. 22, expansion, imprvs. at Lambert-St. Louis Municipal Airport, $10,000,000. Date changed. CD 11-21-56.

▲† S. D., Rapid City—UNDERGROUND LAUNCHING FACILITIES—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., underground launching facilities, Titan Missile Site, near Ellsworth Air Force Base, $50,000,000 (no appropriation). (Correction—estimated cost.) CD 3-19-57.

▲† Wyo., Cheyenne—MISSILE LAUNCHING FACILITY—U. S. Eng., 1709 Jackson St., Omaha, Neb., missile launching facility, Francis E. Warren Air Force Base, $30,000,000, no appropriation.

PUBLIC BUILDINGS

▲ Calif., Modesto—SCHOOL—Modesto City High School Dist., 426 Locust St., plans by John Bomberger, 1505 10th St., high school, $2,500,000.

▲ Calif., Paramount—SCHOOL—Paramount Unified School Dist., 5210 S. California Ave., plans by Wilkinswort, Brady, Smith, 3833 Long Beach Blvd., Long Beach, 2 story, 86,000 sq. ft., Paramount Junior High School, 16200 Downey Ave., $2,000,000. CD 7-7-53.

▲ Colo., Fort Collins—STUDENT UNION—Colorado State University, plans by James M. Hunter, 1126 Spruce St., Boulder, 3 story, rein.-con. student union bldg., $2,400,000. CD 1-18-57.

▲ Conn., East Hartford—SCHOOL—Town, Town Hall, plans by Russell F. Hills, 161 Washington St., South End, Junior-Senior High School addn., Forbes St., $2,000,000. John P. Legnos, 30 Gillett St., consult. engr. CD 3-12-57.

▲ Conn., Westport—SCHOOLS—Town, Town Hall, Coleytown Junior High School, $1,500,000; Compo Mill School, $1,100,000.

▲ Ill., Champaign—COMMUNITY CENTER—City, City Hall, community center, $1,320,000.

▲ Ill., Chicago—HOUSING—Chicago Housing Authority, 608 S. Dearborn St., Zone 5, plans by Shaw, Metz & Dolio, 208 S. LaSalle St., Zone 4, Housing Ill. 237, Stage 2, twelve 18 story, brick, concrete apartments, 43rd to 47th Sts. along State St., $14,700,000. Housing Ill. 237, Stage 3, 57th to 51st Sts., $13,200,000. CD 8-9-56.

▲ Ill., Evanston—SCHOOL—Bd. Educ., Dist. 65, 1323 Hinman Ave., $2,200,000, bond election Apr. 11, schools, Central School, $808,000. CD 8-4-58.

▲ Ill., Pleasant Valley—SCHOOL—Pleasant Valley Twp. School Dist., Bd. Educ., brick high school, $1,750,000.

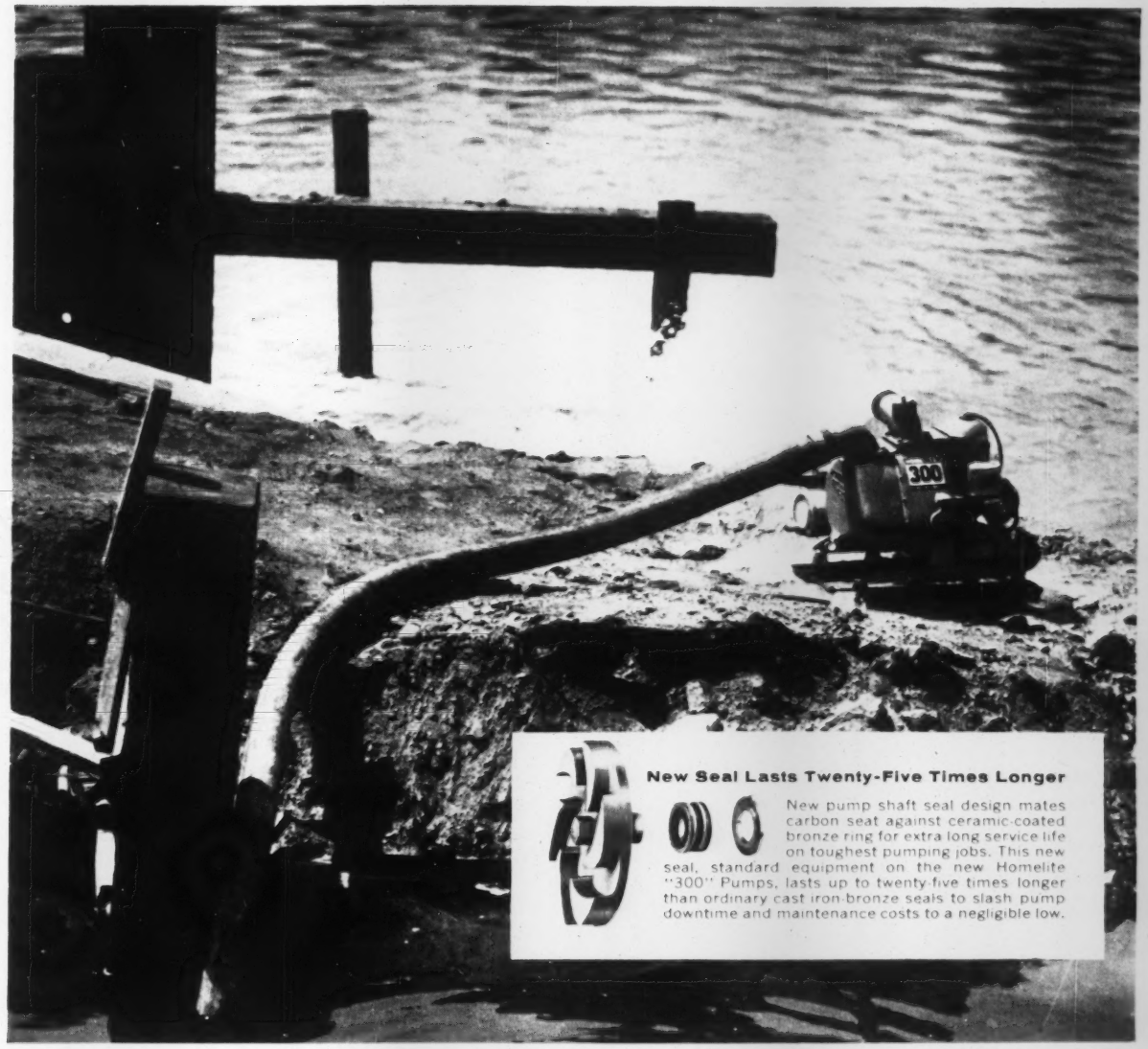
▲ Ill., Streator—SCHOOL—Bd. Educ., defeated $1,975,000 bonds Mar. 14, high school addn. Bridley & Bradley, 924 N. Main St., Rockford, archts. CD 3-12-57.

▲ Ind., Indianapolis—CITY-COUNTY OFFICE—Indianapolis-Marion Bldg. Auth., 543 Illinois Bldg., 28 story, structural steel, rein.-con., masonry city-county office, underground garage adjoining, later, $29,000,000. Bids about May 15. Allied Architects & Engineers, 130 E. Washington St., Zone 4, archts. J. M. Rotz Eng. Co., 1919 N. Meridian St., mech. engr.

▲ Mass., Salem—ARTS AND SCIENCE—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Curtin & Riley, 45 Newbury St., Boston, arts and science, Teachers College, $1,500,000. Constr. 1959.

▲ Minn., Anoka—SCHOOLS—Bd. Educ., $1,990,000 bond election Apr. 14 (1) elementary school, $750,000, Thorshov & Cerny, Inc., 400 Metropolitan Bldg., Minneapolis, archts. (2) Senior High School addn., $400,000, Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, Minn., archts. Date changed. CD 3-13-57.

(Continued on page 89)



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(Continued from page 85)

▲ N. J., Trenton—SCHOOLS—Hamilton Twp. Bd. Educ., 2069 Greenwood Ave., $4,400,000 bond election May 26; Junior High School, White Horse-Hamilton Square Rd., near Maple Shade School, $2,200,000, Junior High School, Yardville-Hamilton Square Rd., half mile south of Rte. 33, $2,200,000, Kramer, Hirsch & Carchidi, 115 West State St., archts. CD 11/24.

▲ N. Y., New City—SCHOOL—Central School Dist., elementary school, Little Tor and New Hempstead Rds., $2,370,000.

▲ N. Y., North Tonawanda—SCHOOL—Bd. Educ., 236 Goundry St., defeated $3,250,000 bonds Mar. 17, Senior High School, $4,690,000, Pfohl, Stoll & Roberts, 185 Niagara St., Buffalo, archts. CD 1/22.

▲ N. Y., Roslyn—SCHOOL—Bd. Educ., Union Free School Dist., voted $2,300,000 bonds Mar. 12, Harbor Hills Elementary School, Glen Cove Rd. near Northern Blvd., $1,690,000, Moore & Hutchins, 800 2nd Ave., New York, Zone 17, archts. CD 3/5.

▲ Pa., Imperial—SCHOOL—West Allegheny Joint School Dist., high school, $2,000,000. CD 4/21/55.

▲ Pa., Nanty Glo—SCHOOL—Nanty-Glo-Vintondale Jt. School Dist., Nanty Glo Secondary School, $1,665,000.

▲† Tenn., Oak Ridge—METALS and CERAMICS—Atomic Energy Comm., P. O. Box E, Oak Ridge; plans by Giffels & Vallet, Inc., archt consult., engrs., 1000 Marquett Bldg., Detroit, Mich.; metals and ceramics bldg. at Oak Ridge National Laboratory, $6,500,000. Constr. late 1959. CD 9/12.

▲ Tex., Abilene—MUNICIPAL CENTER—City, City Hall, plans by Chas. Landers, Wm. Collier & David S. Castle Co., Abilene; municipal center, coliseum type arena, auditorium seating 10,000, theater aud. seat 2,000, city offices) $3,000,000; area paving and auto center, for Municipal Center, $125,000.

▲ Wis., Racine—SCHOOL—Bd. Educ., plans by Warren Holmes Co., 2200 Michigan-National Tower Bldg., Lansing, Mich.; F. R. Starbuck Junior High School, $2,200,000. Constr. in Fall.

COMMERCIAL BUILDINGS

▲ Ala., Gadsden—HOSPITAL—Baptist Memorial Hospital, 1130 6 Ave., plans by Charles W. McCauley, 1917 5 Ave. S., Birmingham, hospital, $3,000,000.

▲ Ala., Mobile—HOSPITAL—Providence Hospital, 1504 Springhill Ave., plans by Charles McCauley, Jackson Bldg., Birmingham, hospital, adds., $1,500,000-$2,000,000.

▲ Calif., Oceanside—HOSPITAL—Tri-City Hospital Dist., Oceanside; plans by Neptune & Thomas, 1560 Colorado St., Pasadena; 3 story, bsmnt., 54,000 sq. ft., rein.-con. hospital, $2,000,000.

▲ Calif., San Juan Capistrano—SCHOOL—Capistrano Union School Dist., 31422 State Hy., $2,000,000 bond election May 19; high school, CD 2, 2n.

▲ Calif., Santa Ana—STORE—Montgomery-Ward, 6719 Pacific Ave., Huntington Park; plans by Leach & Cleveland, 434 S. Robertson Blvd., Los Angeles; 2 story, 150,060 sq. ft. store, 17th St. and Bristol St., $2,000,000.

▲ Conn., East Hartford—APARTMENT—Sunset Hills, 1007 Farmington Ave., West Hartford; twenty 250 units, colonial design, apartments, Arnold Dr., $2,000,000.

▲ Conn., Waterbury—OFFICE, etc.—Colonial Plaza Corp., 323 Main St., Paterson, N. J.; 35,000 sq. ft. office bldg. and medical arts center, West Main St. and Thomaston Ave., $700,000; shopping center, West Main St., $1,500,000.

▲ Ill., Chicago—HOME FOR INCURABLES—University of Chicago, 5801 S. Ellis Ave.; plans by Schmidt, Garden & Erickson, 104 S. Michigan Ave.; 4 story, brick Home for Incurables addn., 5545 S. Ellis Ave., $1,500,000.

▲ Ill., Rockford—HOSPITAL—Swedish-American Hospital, 1411 Charles St., 10 story hospital addn., Charles St., $4,000,000.

▲ Ky., Covington—SHOPPING CENTER—Owner, c/o Robert and Alvin Gould, Carew Tower, Cincinnati, O.; planned by Gardes, Pressler, Brooks & Associates, 1939 Pendleton Rd., Cincinnati, O., 400,000 sq. ft. shopping center, 5,000-car parking, Dixie Hy., $12,000,000.

▲ Mass., Boston—HOTEL-MOTEL, etc.—Washington Realty Co., c/o Samuel F. Colman, 1389 Washington St., Quincy; plans by S. S. Eisenberg, 739 Boylston St., Boston, Mass.; 6 story hotel-motel and restaurant, inc. parking, (former site Boston Post), $10,000,000. Constr. 1959-1960.

▲ Mo., St. Louis—HOME FOR AGED—Jewish Orthodox Old Folks Home, 1438 East Grand Ave., Zone 7, 105-bed Home for Aged addn., $1,500,000.

▲ N. J., Convent Station—SCIENCE, etc.—Sisters of Charity of St. Elizabeth College; plans by Farrenz & Taylor, 1461 Broadway, New York, N. Y.; 4 story, brick, stone science and research laboratories, classrooms, refectory, halls and museum, and library, Seton Dr., $1,500,000; 3 story, brick, stone home for juniors, Seton Dr., $1,250,000.

▲ N. M., Albuquerque—OFFICE, etc.—Del E. Webb & Associates, 23 Ave., Phoenix, Ariz.; and Roy T. Drachman, Tucson, Ariz.; plans by Fiske, Moore, Bevin & Fairburn, 1840 Lomas Blvd. NE, 14 story office, $2,500,000; 3-level circular, in shape, bank, $1,000,000. First National Bank of Albuquerque, 223 Central Ave. NW., lessee.

▲ N. Y., Aurora—SHOPPING CENTER—Donald W. Katz, Lafayette Bldg., Buffalo, 100,000 sq. ft. shopping plaza and 1,000 car parking, 12 stores, Pleasant and Lapham Rds., $1,500,000.

▲ N. Y., Buffalo—APARTMENT—Tower Apartments, Inc., 84 Colorado Ave.; plans by Backus, Crane &

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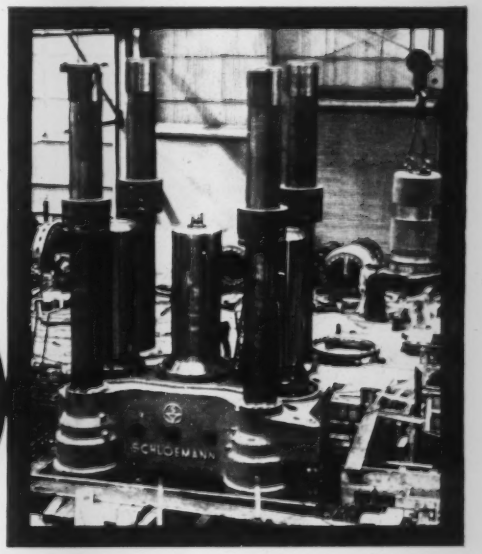

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Love, 232 Delaware Ave., 13 story, 90-apartment, $1,500,000.

▲ **N. Y., New York**—APARTMENT—Ben Kaufman & Assocs., 450 Seventh Ave., 30 story co-operative apartment, 1299-1309 Second Ave., 215-53 E. 68th St. and 212-42 E. 69th St. $10,000,000.

▲ **N. Y., Syracuse**—MOTOR HOTEL—Chalomet Corp., c/o Allen-Longley, University Bldg., plans by Victor Gruen Assocs., 31 W. 12th St., New York, 140 unit Charter House Motor Hotel, $2,500,000. Hotel Corp. of America, New York, N. Y., lessee.

▲ **O., Elyria**—HOMES—Black River Development Co., 1900 Euclid Ave., Cleveland, Zone 15, 350 homes along E. River St. and Sherman St. extensions, $9,000,000. Will be built over 3-4 year period.

▲ **O., North Olmsted**—HOMES—Westwood Constr. Co., 6500 Pearl Rd., Cleveland, Zone 30, 100 homes, Columbia Estates on Sunset Oval, off Mastick Rd., $2,500,000.

▲ **O., Streetsboro**—HOMES—Red Fox Estates, 241 S. Chestnut St., Ravenna, O., 310 low cost homes, Shalersville Twp., near here, $3,000,000.

▲ **Ore., Portland**—MOTEL—Harsh Investment Co., 1428 SW 12 Ave., plans by Dougan & Helms, Royal Bldg., 250 unit motel, $2,500,000.

▲ **Tex., Dallas**—MOTOR HOTEL—Hot Shoppes, Inc., J. Willard Marriott, jr., pres., 5161 River Rd., Bethesda, Md., 300 room motor hotel, Trinity Industrial Dist., $3,500,000. Constr. in June.

▲ **Tex., Houston**—HOSPITAL—Central Lutheran Activities Council, 3836 Wheeler St., 250 bed hospital, Texas Medical Center, $7,000,000.

▲ **Tex., Houston**—MOTOR HOTEL—Palmetto Corp., 3610 Main St., 200 unit motor hotel, 18 acre site across street from "29 Palms Motor Hotel", $2,000,000.

▲ **Tex., Houston**—RESEARCH CENTER—Texas Medical Center, 1133 M. A. Anderson Blvd., 3rd wing), Jesse H. Jones Medical Research Center, $3,000,000.

▲ **Tex., Lubbock**—BANK, etc.—Citizens National Bank Bldg., Lubbock, plans by Butler-Kimmel Co., 412 Ave. M, and Welton Becket & Assocs., consultants, 2225 Bryan St., Dallas, 12 story, humid., concrete slab bank office, rein.-con. fdn., air conditioning, $1,000,000-$2,000,000. CD 6-6.

▲ **Tex., San Antonio**—DWELLINGS—H. B. Zachry Properties, Inc., Transit Tower, plans by Sid Lord, 5307 Broadway Ave., 80 dwellings, Meadowwood estates Subdivision off N. New Braunfels Ave., $1,820,025. CD 10-14.

▲ **Wash., Kennewick**—HOUSES—G. L. Thompson, 3319 W. 10th Ave., 125 houses in Iphland Park addn. in southwest Kennewick Highlands, $1,500,000.

▲ **Wash., Kent**—HOUSES—Capital Constr. Co., c/o United Bldg. Co., Fife Sq., Tacoma, 217 houses, Benson Hy, $2,500,000. Constr. in June.

▲ **Ont., Toronto**—HOSPITAL—St. Clair Hospital Assn., c/o Venchiarutti & Venchiarutti, archts., 196 Wilson Ave., Toronto, and Dr. F. G. Faludi, archt., 614 Church St., 150 bed hospital, north side of Finch Ave., $1,500,000.

INDUSTRIAL BUILDINGS

▲ **Calif., La Mirada**—PLANT—Challenge Manufacturing Co., 7400 E. Bandini St., Los Angeles, 210,000 sq. ft. concrete truck mixer plant, near Santa Ana, $3,000,000.

▲ **Kan., Wichita**—POWER PLANT—Kansas Gas & Electric Co., 201 N. Market St., 160,000 kw. (1st unit) Gordon Evans Power Plant, West Wichita, $8,000,000. Ebasco Services, Inc., 2 Rector St., New York, N. Y., consult. engr. To go ahead in 1960.

▲ **Md., Rockville**—PLANTS—Washington—Rockville Industrial Park, 1160 Rockville Pike, Rockville, plans by Montgomery & Dolan, 8641 Colesville Rd., Silver Spring, 4 plants, professional engineering and electronics, 120,000 sq. ft. and parking area, $2,000,000.

▲ **Neb., Omaha**—PARKING—Brandeis Store, E. John Brandeis, pres., 16th and Douglas Sts., 9 story parking bldg., 17th and Douglas, $2,000,000.

▲ **N. Y., Syracuse**—INDUSTRIAL CENTER—Pomeroy Securities, Inc., 327 Montgomery, plans by S. Elmer Chambers, 633 S. Warren, light industrial center, on 15-acre site, Midler Ave. and Erie Blvd., $2,000,000.

▲ **N. Y., Syracuse**—PARKING GARAGES—Syracuse Park & Shop Corp., c/o Joseph Owens, Jr., parking garages: (1) 378 car E. Fayette and S. Warren Sts., (2) 390 car, S. Salina and Harrison Sts., $1,850,000.

▲ **Tex., Houston**—PLANT—Chicago Bridge & Iron Co., C & I Life Bldg., plant, $3,000,000.

▲ **O., Holmesville**—PLANT—Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland, Zone 32, plant to process chemicals, $1,500,000. Constr. this year.

▲ **O., Mansfield**—PLANT—Tappan Stove Co., 250 Wayne, 2 story paint and process (1st) and 1 sty. steel mill and shear (like bldg., 1959) plant (1960), est. $2,000,000. CD 8-24-54.

▲ **O., Mentor**—PLANT—W. S. Tyler Co., 3615 Superior Ave., Cleveland, Zone 14, 1st unit plant, $800,000. Total cost, $4,000,000-$4,500,000. Geo. S. Ride Co., Terminal Tower, Cleveland, Zone 13, consult. engr. CD 8-14.

▲ **O., Murray City**—PLANT—Tappan Stove Co., 250 Wayne, Mansfield, 20,000 sq. ft. shell molding facilities, and enamel plant addn., $1,700,000.

▲ **Tex., Houston**—WAREHOUSE—Montgomery Ward & Co., 619 W. Chicago, Chicago, Ill., regional warehouse, $2,750,000.

▲ **Wash., Yacolt**—PLANT—International Paper Co., Long-Bell Div., 220 E. 42 St., New York, N. Y., lumber and plywood plant, Chelatchie Prairie, Lewis River area, $5,000,000. Constr. 1959.

▲ **Alta., Calgary**—PLANT—Consolidated Mining & Smelting Co., N. Turner Siding, 36,000 tons annually chemical plant to produce urea, $5,000,000. V. Rogers, c/o owner, engr.

▲ **Ont., Toronto**—FACTORY—Brunswick-Balke Collender Co. of Canada Ltd., 40 Hanna Ave., plans by Weir Cripps & Assocs., 1216 Yonge St., 200,000 sq. ft. factory, Dundas St. and Second Line between Toronto and Cooksville, $1,500,000.

UNCLASSIFIED

▲ **Calif., Ignacio**—MEMORIAL PARK, etc.—Lundberg, Armet & Davis, 2440 W. 3rd St., Los Angeles, and Trousdale Constr. Co., 650 N. Sepulveda Blvd., West Los Angeles, will not construct, Memorial Park and cemetery, Loma Verde, 200 acre site, near here (museum, admin. bldg., amphitheater, crypts, crematorium, graveyards, etc.), $16,000,000. Project abandoned. CD 2-13.

▲ **Calif., Vallejo**—MARINA—City, City Hall, marina on channel at Mare Island, $1,500,000. C. A. Chaney & Assocs., 7240 Wisconsin Ave., Bethesda, Md., consult. engrs. CD 12-5-47.

▲ **Md., St. Mary's City**—MARINA—Kirke Higgins, 2221 Leesburg Pike, Falls Church, Va., marina at mouth of Potomac River as it joins Chesapeake Bay, Point Lookout, $4,500,000. C. A. Chaney & Assocs., 7240 Wisconsin Ave., Bethesda, consult. engrs.

▲ **N. Y., Buffalo**—PARKING RAMP—City, City Hall, seven level parking ramp, Court and Franklin Sts., $3,100,000.

▲ **Ohio**—BELT CONVEYOR—Riverlake Belt Co., 12 E. Exchange St., Akron, new and enclosed belt conveyor from Cleveland to Bedford, $25,000,000-$30,000,000.

▲ **Texas**—GAS LINES—Permian Basin Pipeline Co., 2223 Dodge St., Omaha 1, Neb., 83 mi. natural gas line to connect with Pioneer, Lubbock area, Lubbock Co., $3,320,000; natural gas compressor station, Lubbock Area, Lubbock Co., $750,000.

▲ **Texas**—GAS LINES—Pioneer Gathering Sys., Inc., Amarillo Bldg., Amarillo, natural gas-gathering lines, Lubbock area, $3,287,100; natural gas booster station, Lubbock Area, Lubbock Co., $400,000. CD 12-21.

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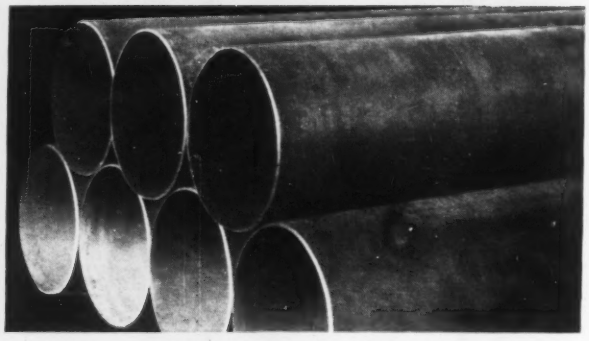

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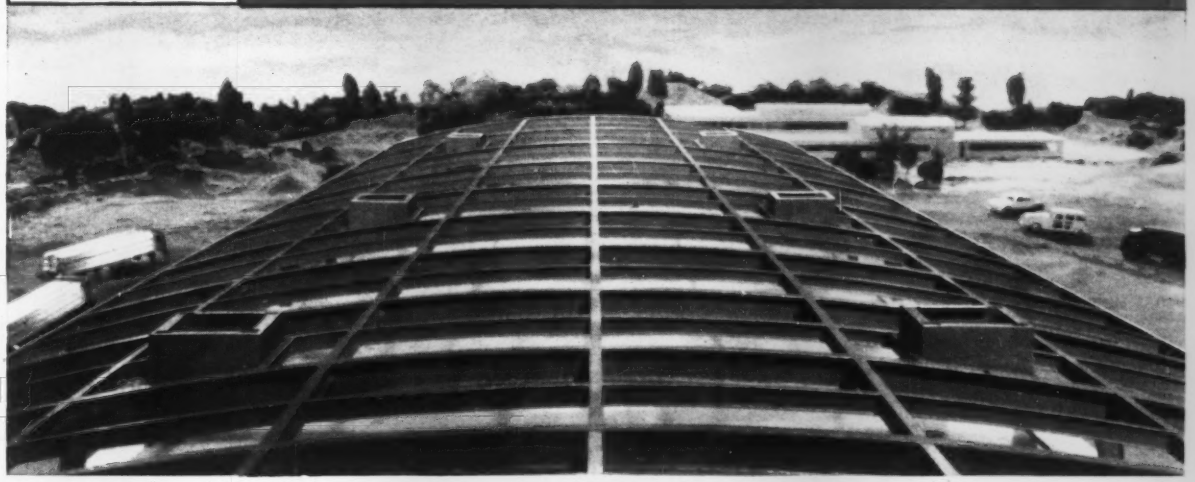

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All of a sudden, a steel skeleton is transformed into a building. The roof goes on before your very eyes! It's Wheeling Tri-Rib Roof Deck — a delight to the owner because it's so economical . . . and to the builder because it's so fast and easy.

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Yet Tri-Rib is only one of many types of proven Wheeling steel roofings that can solve nearly every roofing problem. For example, there's the farmer's old friend, Channeldrain, and Wheeling Corrugated Roofing for special industrial buildings. So, next time you need roofing, be sure you remember that you can *always* rely on *steel . . . Wheeling steel.* Wheeling Corrugating Company, Wheeling, West Virginia.

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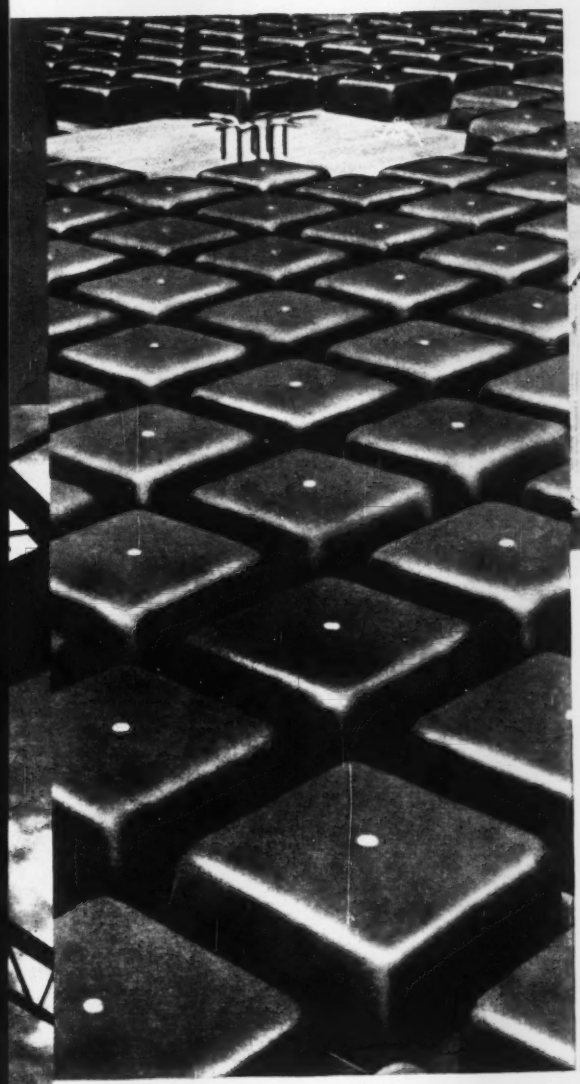
Remember the old song: "Don't Fence Me In?" The architect will agree it expresses his attitude. He wants to achieve his design without restrictions. Therefore, Ceco has established a broad and versatile line of metal building products that provide answers for all architectural viewpoints. That's why Ceco has no axe to grind when it comes to building methods. And that's why you get what you want at Ceco. Ceco Steel Products Corporation. General offices, 5601 West 26th Street, Chicago 50, Illinois. Offices, warehouses and fabricating plants in principal cities.

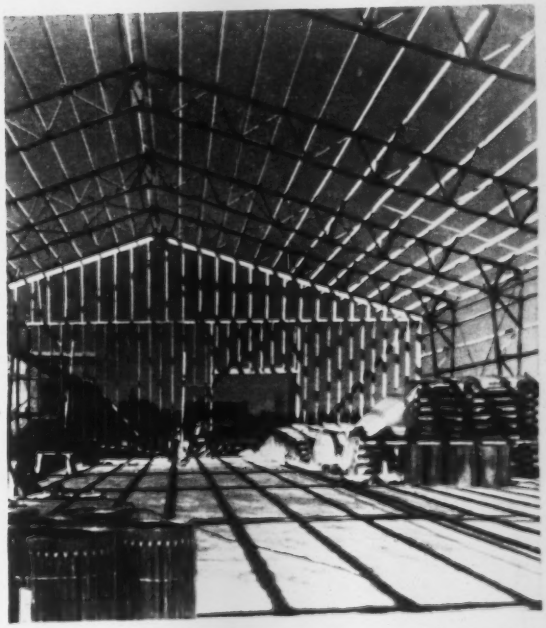
Consider these 4 engineering concepts:

■ If lightweight open floors are wanted in structural steel, the most practical and economical solution can be found in *Ceco Open-Web Longspan and Shortspan Steel Joists.* Lightweight but rigid construction with Ceco Steel joists reduces weight of supporting beams, columns and footings, saving materials throughout the building. Pipes and ducts are easily placed through the open webs of Ceco Joists, making it unnecessary to increase story heights. This saves materials, permits low silhouette exteriors. Construction time is kept to the minimum. An exclusive feature: Low cost quality underfloor electrification is obtained by using Ceco Electro-Channel Steel Joists in combination with Ceco standard joists.



■ If open floor area is wanted in reinforced concrete, the answer is waffle-type flat slab construction formed with *Ceco Steeldomes*. Wide column spacings are achieved with Steeldomes, because of (a) the basic economy of two-way construction, and (b) the saving of dead-load through use of a joist framing system. Projecting beams are eliminated—story heights kept to the minimum. Splayed heads and drop panels can be eliminated, too. Your client saves on concrete, steel and labor . . . gets wide open spaces he can convert to profit. R/C duct underfloor electrification is readily installed, allowing electrical and telephone outlet flexibility for the life of the building.

■ If you want to exercise your architectural imagination, turn to Ceco *Aluminum* or *Steel Curtainwalls*. Using experience and sound engineering principles, Ceco can accommodate almost any architectural design. This frees you of limitations. Ceco mullions and windows are proven sound in engineering, practical in application and pleasing in appearance. So to achieve your artistic goal in a practical way, see Ceco for engineering advice before you sit down at the drawing board.



■ If standard clearspan design in one-story construction is wanted, *Cecoframe Steel Buildings* fill the need. Durable Cecoframe structures are ideal for warehousing and manufacturing—for machine shops and utility buildings—can also serve a variety of light-occupancy commercial and industrial purposes. Complete freedom is offered by Cecoframes because they can be enclosed with any material—such as walls of windows, engineered Cecoroll galvanized steel roofing, steel panels, brick, block or wood, with hollow-metal or overhead doors. Cecoframes are designed on open-web steel joist principles for great rigidity. You have freedom in layout because Cecoframe structures can be placed side by side or in L shapes to fit any land site.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 13 Connecticut
STREETS AND ROADS
April 14 Massachusetts April 17 Connecticut

BUILDINGS—LB & CA

▲† D & L Constr. Co. & Assocs., 13238 Sherman Way, North Hollywood, Calif., LB $7,945,000 (12 bidders) 500 unit Capehart HOUSING, U. S. Naval Submarine Base, GROTON, CONN.; Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y. Bids Mar. 31. CD 3/13.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 15 New Jersey

BUILDINGS—BA

▲ Pa., Lebanon—MUNICIPAL—BA 4-14—Contrs. Lebanon Co.; City Hall, municipal bldg., $3,000,000. Plans deposit $150; William Lynch Murray & Assocs., 1600 N. 2nd St., Harrisburg, archts. CD 5-27.

▲† Md., Bethesda—LIBRARY—BA 5-5—General Services Admin., 7th and D Sts. S. W., Wash. 25, D. C., National Library of Medicine (except elevator plant) National Institutes of Health, Proj. No. 1809-6, $7,000,000. R. B. O'Connor & W. H. Kilham, Jr., 101 Park Ave., New York, N. Y., archts.; adv. ENR 4-9. CD 1-30.

HEAVY CONSTRUCTION—LB & CA

▲ Queens Structure Corp., 32-57 57th St., Woodside, N. Y., LB $2,102,218 (6 bidders), Throgs Neck Bridge Contr. No. TN-12C, Bronx Plaza Roadway and Cinder Storage Structure, Bronx, Boro. NEW YORK; Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Mar. 31. CD 3-5.

▲ W. H. Greene Co., Carman Ave., Westbury, N. Y., LB $2,797,959 (5 bidders), lateral sewers at Herricks, Williston Park, East Williston and vicinity, Sewage Collection-Dist. No. 2-AW, Contr. No. 1002-2-AW-1, Town of North Hempstead, MINEOLA, N. Y.; County Executive Nassau County, Old County Court House, Mineola, N. Y. Bids Mar. 31. CD 3-12.

▲† Western Contg. Corp., 400 Benson Bldg., Sioux City, Iowa, CA $2,065,000, beach erosion control project at Fire Island Inlet, CIVENG-30-079-59-34, NEW YORK, U.S. Eng., 111 E. 16th St., New York 3, N. Y. Bids Mar. 3. CD 3-5; under LB.

BUILDINGS—LB & CA

▲ Perini Corp., 74 Montwait St., Framingham, Mass., CA Est. $5,700,000, LIBRARY, ITHACA, N. Y., Cornell University, Ithaca, N. Y. CD 12-2.

▲ Turner Constr. Co., 150 E. 42nd St., New York 17, N. Y., CA Est. $5,000,000, 12 story OFFICE addn. to present 11 story bldg., southwest corner 44th St. and 5th Ave., NEW YORK, N. Y.; Guarantee Trust Co., 140 Broadway, New York 7, N. Y.; Eggers & Higgins, 100 E. 42nd St., New York 17, N. Y., archts.

▲† Beacon Constr. Co., 102 Hano St., Boston, Mass., LB $1,958,000 (1 bidder), 120 unit Capehart HOUSING at Seneca Ordnance Depot, ROMULUS, N. Y.; U. S. Eng., 111 E. 16th St., New York 3, N. Y. Bids Mar. 31. CD 3-20.

▲ Hideaway Hills Inc., 47 E. Church Rd., Elkins Park, Pa., Separate Contracts, $2,200,000, RESIDENTIAL DEVELOPMENT (92), Welsh Rd., etc., HORSHAM, PA.; Lester H. Weckesser, 16 Montana Ave., Erdon, N. J., archt.

▲ John McShain, Inc., 17th and Spring Garden Sts., Phila., Pa., CA $2,397,000, general constr., SCIENCE BLDG. for Temple University, Broad and Montgomery Aves., PHILA., PA.; General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Mar. 11. CD 3-19; under LB.

Riggs & Distler & Co., Inc., 1518 Walnut St., Phila., Pa., CA $598,367, heating, ventilating and air-conditioning for science bldg., (Phila., Pa.).

▲ Gorchov Bros., 284 Montgomery Ave., Bala Cynwyd, Pa., Separate Contracts, $9,600,000, RESIDENTIAL DEVELOPMENT (600) Morell Ave., etc., PHILA., PA. Budd Ross, 5404 Market St., Phila., Pa., archt.

▲ David Warren Constr. Co., 170 Montgomery Ave., Merion, Pa., Separate Contracts, $3,750,000, RESIDENTIAL DEVELOPMENT, various sections, $530,000, RESIDENTIAL DEVELOPMENT, Berree Rd., etc., PHILA., PA.; Jack Sweetman, 405 Market St., Chester, Pa., archt.

▲ Blake Constr. Co., Inc., 33 E. St. S. W., Wash., D. C., CA $6,203,000, Base Bld., Sibley Memorial HOSPITAL and Lucy Webb Hayes SCHOOL of NURSING, MacArthur Blvd. and Loughboro Rd. N. W., WASH., D. C.; Sibley Memorial Hospital, 1140 N. Capitol St., Wash., D. C. Bids Feb. 18. CD 2-25; under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 14 South Carolina
STREETS AND ROADS
April 14 South Carolina April 17 Kentucky

▲ N. C., Greensboro—BA 5-8—City, City Hall, North Buffalo Creek Sewage Treatment plant, $3,000,000. Plans deposit $50; Hazen & Sawyer, 122 E. 42 St., New York, N. Y., engr. CD 1-13.

BUILDINGS—BA

▲ S. C., Greenville—HOSPITAL—BA 4-23—Greenville General Hospital, Courthouse, hospital addn., $2,000,000. Plans deposit $50; Kiff, Colean, Voss & Souder, at office of York & Sawyer, 101 Park Ave., New York, N. Y., archts. CD 9-25.

▲† Fla., Orlando—HOUSING—BA 4-28—Base Procurement Office, McCoy Air Force Base, 668 unit Capehart housing, AF Proj. 233, McCoy Air Force Base, $11,000,000; Joseph H. Bryson, 111 W. Adams St., Jacksonville, archts. CD 3-25.

▲† Va., Richmond—FEDERAL OFFICE—BA 5-15—General Services Admin., Regional Office Bldg., 7th and D Sts. S.W., Wash. 25, D. C., Federal Office Bldg. (except elevator plant) Va. Proj. 44901. Plans deposit $75; adv. ENR 4-9. CD 1-6/56.

HEAVY CONSTRUCTION—LB & CA

▲ WEST VIRGINIA—State Road Comm., Charleston, Zone 5.

Wright Contg. Co., Brookhaven Rd., Columbus, Ga., CA $2,011,116, c. conc. 1.78 mi. Interstate Rte. 81 from Sect. Rte. 9 to 0.1 mi. North of Cumberland Valley Railroad Bridge, Proj. I-81-2(9) 15 and S 109 (5), Contr. No. 1, Berkeley Co. Bids Mar. 24, awarded Mar. 26. CD 3-27; under LB.

▲ SOUTH CAROLINA—State Hy. Dpt., Hotel Jefferson, Columbia.

Sloan Constr. Co., Inc., Peoples National Bank Bldg., Greenville, S. C., CA $2,157,724, b. conc. 13.725 mi. Int. Rte 85, S. C. Dockets Nos. 11,347.1 and 11,352.1, F. A. Projs. Nos. I-85-3 (12) (I-301-2 (7)) & I-85-3 (15) (I-301-2 (10)), Cherokee Co. Bids Mar. 17. CD 3-24; under LB.

▲ ALABAMA—State Hy. Dpt., Montgomery, Bids opened 3-27.

Ala.—Wilson Brothers, Childersburg, Fla., LB $335,435 base and bit. 7.136 mi. from S. Heidelberg Road on A.I. 5, Bibb and Perry Counties; LB $349,122 base and bit. 7.704 mi. from Ala. 5 on Marion By-pass N. to Ala. 5, Perry Co.;

Ala.—Fowler Rental Equipment Co., Oneonta, Ala., LB $1,651,591, grading, drainage 3.087 mi. from SE Springville NE on Interstate 59, Birmingham-Chattanooga line, St. Clair Co.; LB $1,814,149, grading, drainage 6.327 mi. from near Argo NE to SE Springville on Interstate Rte. 59, Jefferson Co. CD 3-16.

▲† J. A. Jones Constr. Co., 209 W. 4th, Charlotte, N. C., and Charles H. Tompkins Co., 1757 K N.W., Wash., D. C. (joint venture), CA $20,669,000, dam and lock emergency gate on Markland Lock and Dam, Ohio River, 4 mi. south of Warsaw, Ky., CIVENG-15-029-59-44, KENTUCKY and INDIANA, U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Mar. 19. CD 3-23; under LB.

BUILDINGS—LB & CA

▲† H. L. Coble Constr. Co., 1708 Battleground Ave., Greensboro, N. C., LB $4,454,000 (8 bidders), 285 unit Capehart HOUSING, No. 11-ENG-44-110-59-18, FORT LEE, VA., U. S. Eng., foot of Front St., Norfolk, Va. Bids Mar. 27. CD 3-20.

▲ T. A. Loving, Wachovia Bank Bldg., Goldsboro, N. C., CA $1,911,000, 178 unit HOUSING Proj. VA 1-6, PORTSMOUTH, VA. Portsmouth Redevelopment & Housing Auth., 1400 Columbus Ave., Portsmouth, Va.; Bernard B. Spigal, Kresge Bldg., Norfolk, Va., archt. Awarded Mar. 19. CD 8-26-52.

▲ Daniel Constr. Co. of Alabama, 822 7 Ave., So., Birmingham, Ala., CA Est. over $2,000,000, MFG. PLANT, SAVANNAH, GA. National Gypsum Co., c-g contractor. CD 6-2-54.

▲ Daniel Constr. Co. of Florida, 841 Miami Rd., Jacksonville, Fla., CA $3,135,135, COLISEUM, JACKSONVILLE, FLA. City, City Hall, Jacksonville, Fla. Bids Mar. 3; awarded Mar. 23. CD 3-9; under LB.

▲ A. C. Sanford Constr. Co., 630 S. Slappey Dr., Albany, Ga., LB $4,048,056 (9 bidders), 488 (w rent) HOUSING UNITS, in Tuxedo Court, BIRMINGHAM, ALA. Birmingham Housing Auth., 600 N. 24 St., Birmingham, Ala. Bids Mar. 31. CD 2-25.

▲ S. S. Jacobs Co., Independent Life Bldg., Jacksonville, Fla., CA Est. $2,000,000, SHOPPING CENTER, Brainerd Rd., CHATTANOOGA, TENN. Independent Theatres, Inc., c-g contractor. CD 3-2.

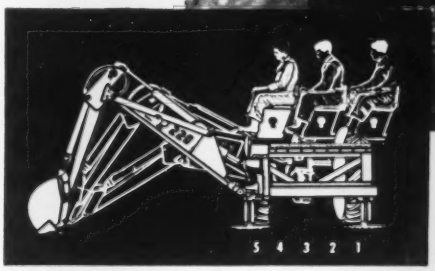
MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
April 15 Michigan
STREETS AND ROADS
April 15 Michigan April 28 Ohio

(Continued on page 96)

the GREATEST BACKHOE of ALL!



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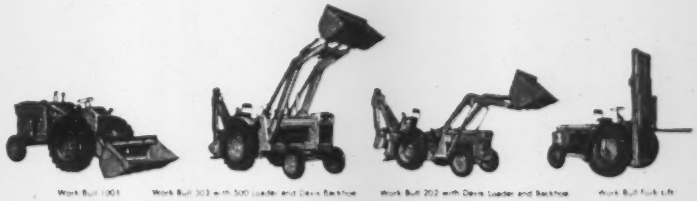

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(Continued from page 94)

BUILDINGS—BA

▲ **O., Cleveland Heights**—SCHOOL—BA 5/5—Bd. Educ., 1749 Lee Rd., Cleveland, Zone 18, Cleveland Heights High School addn. (first section). $2,113,000. Plans deposit $75. Outcalt Guenther & Assoc., 13124 Shaker Sq., Cleveland, Zone 20, archts. CD 1/27.

HEAVY CONSTRUCTION—LB & CA

▲† **S. J. Groves & Sons**, 19 Rector St., New York, N. Y., CA $25,216,378, locks, operations bldg. and guard walls for New Richmond Locks and Dam Proj. Ohio River near Ohio, O. CIVENG-46-022-59-42, OHIO and KENTUCKY, U. S. Eng., 237 4th Ave., Huntington 18, W. Va. Bids Mar. 5. CD 3/10, under LB.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis, Zone 4. Bids opened 3/26.

Ind—**Spears-Dehner, Inc.**, 1212 Clark St., Fort Wayne, Ind., and **John Dehner, Inc.**, 1206 Clark St., Fort Wayne, Ind., LB $2,841,160, est. $2,967,832 (8 bidders), c. conc. 5.079 mi., Contr. R-4650, Wayne Co.;

Ind—**Garrard Excav. Co.**, Montezuma, Ind., LB $822,694, est. $910,795 (7 bidders), c. conc. 2.725 mi., Contr. R-4619, Parke Co. CD 3/10.

▲† **Corbetta Constr. Co.**, 208 S. LaSalle St., Chicago 4, Ill., CA $2,010,910, Nike Center, 37,000 sq. ft. Missile Master Bldg., operations bldg., squadron bldg., heating plant, 2 radar towers, pumphouse, water storage tanks, Arlington Heights, ENG-11-032-59-71, ILLINOIS, U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. CD 3/27, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing. **Pierson Contg. Co.**, 200 Eddy Bldg., Saginaw, Mich., CA $2,070,771, 3.8 mi., dual 24 ft. concrete roadway and 5 structures on Detroit-Chicago Expressway (relocated US 12) from Carmody Rd. west to Main St., Berrien Co. Bids Feb. 18. CD 3/2, under LB.

▲† **S. J. Groves & Son**, P. O. Box 1059, Springfield, Ill., LB $7,845,454, (4 bidders), parking and operational aprons, jet fuel sys., Richard I. Bong Air Base, ENG-11-032-59-33, KANSASVILLE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Mar. 30. CD 3/5.

BUILDINGS—LB & CA

▲ **Virginia Homes, Inc.**, 3116 Parsons Ave., Columbus, O., Owner Builds, $4,000,000, Hillgate No. 3, HOUSING DEVELOPMENT, COLUMBUS, O.

▲ **Arcole Midwest Corp.**, 3225 Main St., Skokie, Ill., CA $1,905,614, excavation, grading, earth relocation O'Hare International Airport, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. CD 3/24, under LB.

▲ **Mayfair Constr. Co.**, 5660 N. Kedzie Ave., Chicago, Ill., LB $1,913,500, general contract 4 story, rein.-con. HOSPITAL, Fantus Outpatient Clinic, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. Bids Mar. 31. CD 3/16.

▲ **Lou Perini Corp.**, 720 N. Jefferson St., Milwaukee, Wis., CA $3,000,000, 300,000 sq. ft. ADMINISTRATION AND RESEARCH CENTER, SKOKIE, ILL. Teletype Corp., 1400 Wrightwood Ave., Chicago, Ill. Bids Feb. 26, awarded Mar. 12. CD 2/17.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 17 Texas — April 24 Missouri

STREETS AND ROADS

April 16, 23 Kansas — April 17, 18 Texas

April 24 Missouri

▲† **Kan., Topeka**—WS 107A—1 OPERATIONAL BASE, etc.—BA 5/5—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., WS 107A-1 operational base, Complex A, B, & C, near here. ENG-23-028-59-54. $9,000,000-$10,000,000. Plans deposit $45. CD 10/24.

HEAVY CONSTRUCTION—LB & CA

▲† **Malan Constr. Corp.**, 2 Park Ave., New York 16, N. Y., CA $12,870,000, WS-107A, operational base, Squadron One Sites A, B and C, Offutt Air Force Base, Eng-25-066-59-49, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Mar. 11. CD 3/17, under LB.

BUILDINGS—LB & CA

▲ **E. M. Ganley Co., Inc.**, 2992 Oakland Ave., Minneapolis, Minn., CA $4,000,000, general contract 14 story, 200 room Radisson HOTEL addn., incl. remodeling existing bldg., 45 South 7 St., MINNEAPOLIS, MINN. Cambridge-Radisson Co., 45 South 7th St., Minneapolis, Minn. Larson & McLaren, Foshay Tower, Minneapolis, Minn., archts.

▲† **J. W. Bateson**, 6800 Denton Dr., Dallas, Tex., LB $10,783,900, 700-unit Capehart HOUSING, ENG-23-028-59-44, FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Apr. 1. CD 3/12.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 29 California

STREETS AND ROADS

April 16 Nevada — April 29, 30 May 6 California

HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comm., Olympia. **S. S. Mullen, Inc.**, 220 River St., Seattle, Wash. CA $2,479,212, rein.-con. box girder south approach to Lake Washington ship canal bridge on 0.219 mi. Primary State Hy. 1, Seattle Freeway, FAP No. I-5-3(40)168, King Co. Awarded Mar. 25. CD 3/26, under LB.

BUILDINGS—LB & CA

▲† **Stolte, Inc.**, 5467 San Fernando Rd., Los Angeles, Calif., CA $1,844,707, NORAD CONTROL CENTER consisting of transmitter receiver bldg., radar tower fdns., operations bldg., squadron headquarters bldg., main bldg., utilities at Fort MacArthur, utilities at San Pedro Hill, generator bldg. at Fort MacArthur, generator bldg. at San Pedro Hill, ENG-04-353-59-71, FORT MACARTHUR AND SAN PEDRO HILL, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 25. CD 3/31, under LB.

▲ **Arthur Brothers**, 29 Vista Ave., San Mateo, Calif., CA Est. $3,500,000, COTTAGES, APARTMENTS, central recreational facility, 40 acre site, PALO ALTO, CALIF. Northern California Presbyterian Homes, Inc., 593 Market St., San Francisco, Calif. CD 6/18.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 24 Prince Edward Island

STREETS AND ROADS

April 22, 29, May 6 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **K. J. Beamish Constr. Co.**, Box 189, Thornhill, Ont., CA $2,336,110, Don Valley Parkway, Leaside viaduct to East Branch of Don River, grading, paving, drainage, river relocations, incl. Check Dam, Don Mills Rd. interchange and four steel bridges, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Mar. 17, awarded Mar. 25. CD 3/24, under LB.

Robert McAlpine Ltd., P.O. Box 249, Weston, Ont., CA $565,129, F. G. Gardiner Expressway, elevated structure abutment at Station 187 plus 00 to Station 242 plus 15 and entrance road to Canadian National Exhibition from Strachan Ave. (Toronto, Ont.).

LATIN AMERICA

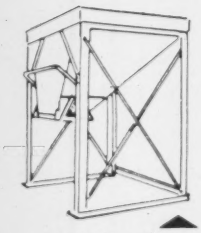
HEAVY CONSTRUCTION—BA

▲ **Peru**, RUNWAYS. Bids Asked. Commercial Aviation & Airport Corp., Govt. of Peru, Lima, 10,850-12,400 ft. jet runways at Lima-Callao Airport at Callao. CD 11/29/56.

(Proposal Advertisements see pp. 110 to 113)

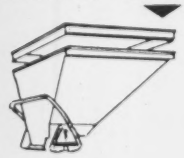
designed WITH CONCRETE IN MIND

GAR-BRO CONCRETE HOPPERS



FLOOR HOPPER

RECEIVING HOPPER



...serve a dual purpose!

For maximum utility, Gar-Bro Concrete Hoppers are made in three units—(1) a bin, (2) a leg stand and (3) a collar for increasing capacity. Thus, the leg stand converts the Receiving Hopper to a Floor Hopper. Gar-Bro Hoppers are used as supply bins for carts; they prevent delays of truck mixer and placing crew and have many other uses. Made in vertical front and center discharge types, there are single gate models ranging in capacity from 28 to 76 cu. ft. and double gate models ranging from 2 to 5.7 cu. yds.

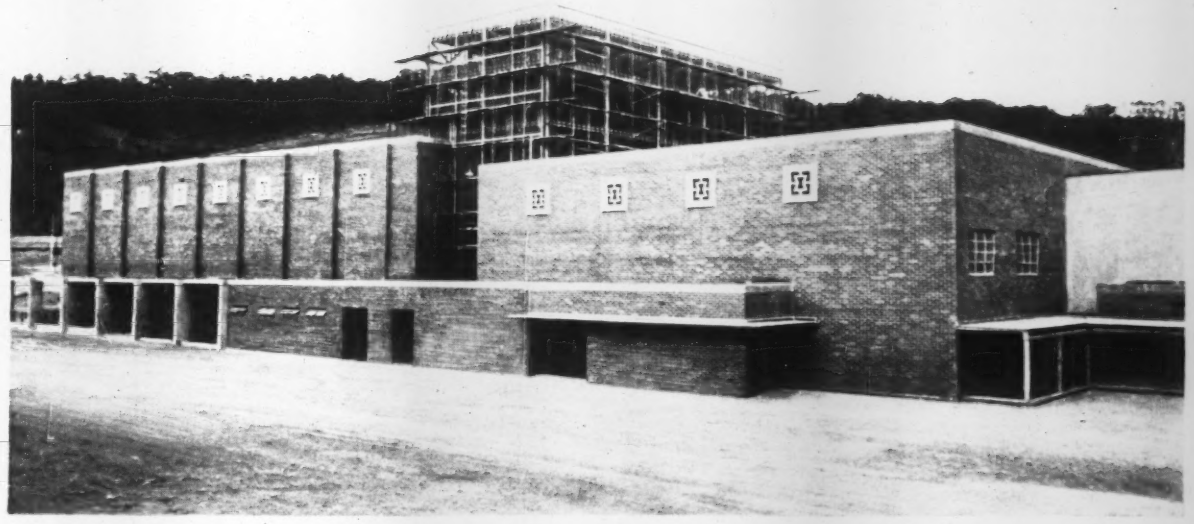
Get these special Gar-Bro features: (patented) non-jamming, grout tight, double clamshell gates. Approved vertical discharge.

See your Gar-Bro dealer or write for catalog.

GAR-BRO MANUFACTURING CO., Los Angeles, Calif. • Peoria, Ill.
General Offices: 2415 East Washington Blvd., Los Angeles 21, Calif.

GAR-BRO CONCRETE HANDLING EQUIPMENT — EQUIPMENT GAR-BRO ENGINEERING SERVICE

THE WORLD'S MOST COMPLETE LINE



LIGHTSTEEL cuts the cost of Oakland Interstake Center

Temple Hill Interstake Center at Oakland, California, functions as chapel and ward house for the local area, as well as a recreational center. LIGHTSTEEL was specified for all interior walls because of its economy and fire safety.

Exterior walls are reinforced brick except for the stage area and exterior walls of the chapel. Stucco over LIGHTSTEEL was used for these towering walls, and according to the structural engineer, Mr. Harold Epstein, resulted in terrific cost savings. Traditional construction is reinforced concrete.

LIGHTSTEEL proved so successful that both the architect and engineer predict it will affect future stage area designs.

Have you considered LIGHTSTEEL economy in your plans? For full details, send for a copy of catalog SS-27.

PENN METAL COMPANY, INC.

General Sales Office: 40 Central Street, Boston 9, Mass.

Plant: Parkersburg, W. Va.

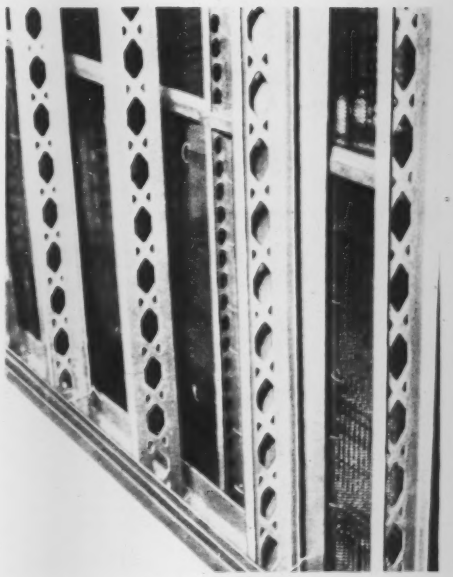
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg, St. Louis

METAL MARK Penmetal 1869 OF QUALITY

a name to remember

TEMPLE HILL INTERSTAKE CENTER—
THE CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS

Architect: Harold W. Burton, Architect, and Douglas W. Burton, Associate Architect
Structural Engineer: Harold L. Epstein
Lather and Plasterer: Clausen and Clausen
LIGHTSTEEL ***furnished by:*** Tayler Products Corp.



LIGHTSTEEL for all interior bearing and non-bearing walls.

PM-202

EUCLID'S BIG 3-

TC-12
TWIN-POWER CRAWLER

S-18
21 YD. SCRAPER

TS-24
"TWIN" SCRAPER

BIG POWER . . . BIG CAPACITY . . . BIG PERFORMANCE !

your best bet to beat the profit squeeze

Two engines deliver 425 net h.p. to power trains . . . separate Torqmatic Drives and full power shift . . . independent track drives . . . 27" standard shoes . . . 8 track rollers . . . excellent accessibility.

30 yds. heaped . . . 336 h.p. engine . . . 4 speed Torqmatic Drive with converter lock-up . . . independent hydraulic controls for bowl, apron and ejector . . . 27.00 x 33 tires with 33.5 x 33 optional.

Two engines with a total of well over 500 h.p. . . . separate Torqmatic Drives . . . 24 yds. struck . . . 32 yds. heaped . . . NoSpin differentials . . . all wheel drive . . . unequalled grade-ability.

WITH COSTS still on the rise, obsolete methods and machines don't help your competitive position or your profit picture . . . can cost you jobs and money. To get your share of work . . . at prices that bring a good return on investment . . . equipment has to produce more without increasing costs. Modern earth-moving techniques and big machines can make the difference between a problem and a decent profit.

Euclid's Big 3 . . . part of an intensive 5-year development program . . . were designed to help you lick the pinch on profits. With big power, big capacity and big performance, each of these "Eucs" provides more work-ability than any other machine in its class. They'll enable you to bid more work . . . small jobs to big projects . . . more profitably. Your Euclid dealer can prove it with *all the facts* . . . you can't afford to make decisions based on partial facts. Be sure to get in touch with him before you buy any new earthmoving equipment.

EUCLID Division of General Motors, Cleveland 17, Ohio

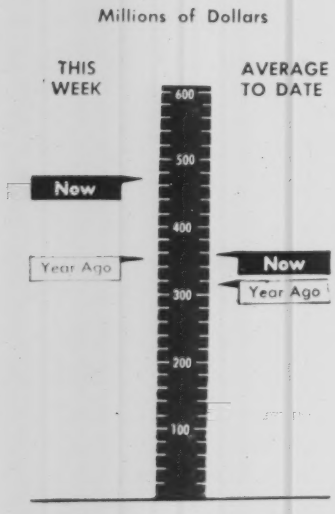
GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

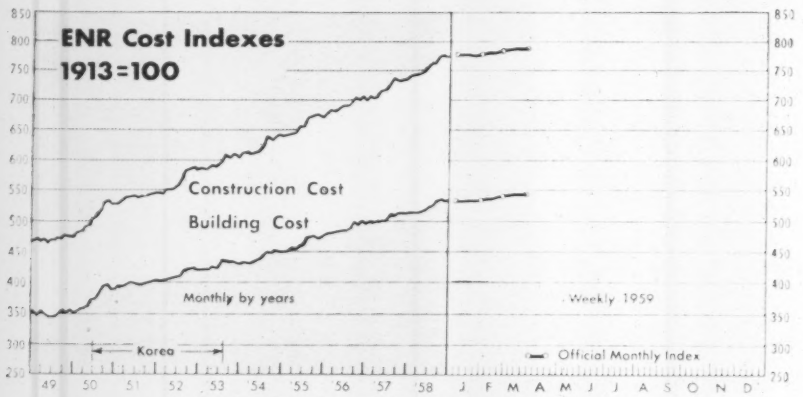
By Ownership	This Week	Cum. 15 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr.	$169.8	$5,108.0	+13
PRIVATE	206.5	2,601.2	+13
PUBLIC	263.3	2,306.8	+13
State & Municipal	119.7	1,937.2	— 1
Federal	143.6	869.6	+67
By Type of Work			
PUBLIC			
Waterworks	6.3	122.1	+71
Sewerage	12.2	159.6	0
Bridges*	15.7	177.1	+31
Highways	41.8	748.2	0
Earthwork, Waterways	56.7	246.8	+32
Buildings, Excl. Housing	54.5	234.8	+10
Housing	26.3	171.7	—13
Unclassified	19.8	146.2	+116
PRIVATE			
Buildings			
Mass Housing	109.9	1,096.6	+ 5
Commercial	66.9	635.5	+23
Industrial	27.9	752.1	+21
Unclassified	1.8	117.0	—17

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of April 2	Cum. 14 wks 1959	Chge '58-'59
	millions		%
Corporate Securities	$167.9	$1,006.5	—33
State and Municipal:			
All Except Housing	50.8	1,665.1	—17
Housing		30.6	+51
Federal Loans	3.4	31.9	—15
Federal Aid			
Total Nonfederal	$222.2	$2,734.1	—21
Federal Appropriations:			
Projects in U. S.			—100
Outside U. S.			
Total New Capital	$222.2	$2,734.1	—33



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Apr. 2 1959	% Change from Mar. 5 1959	% Change from Apr. 3 1958
Construction Cost	784.41	+0.3	+5.2
Building Cost	542.93	+0.4	+5.1

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 4.518.

WAGE RATES, 20-cities' average

	April 1959	% Change from Mar. 1959	% Change from April 1958
Common	$2.503	0	+4.7
Skilled (average 3 trades)	3.796	0	+4.1
Bricklayers	4.047	0	+4.2
Structural Ironworkers	3.817	0	+4.6
Carpenters	3.523	0	+4.1
Equipment operators (average three types)	3.424	+0.2	+2.6

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	5.50	0	+3.9
Lumber, 2x4 Fir, per M fbm	120.53	+1.8	+8.2
Lumber, 2x4 Pine, per M fbm	107.37	+1.7	+8.5
Cement, bulk, per bbl	3.99	0	+0.5
Sand, per ton	2.481	0	+0.6
Ready-mixed concrete, per cu yd	13.91	—0.7	+0.4
Gypsum sheathing, ½"x2'x8', per M sf*	62.653	+0.9	—2.3
Fiber board sheathing, ½" sq. ed., per M sf*	70.958	0	—0.5
Mineral wool insulation, 3" batts, per M sf*	69.788	0	—1.7
Crushed stone, 1½", per ton, CL	2.754	0	—3.0
Concrete blocks, sand/gravel, 8"x8"x16", each*	.225	0	—1.7

	Mar. 1959	Feb. 1959	Mar. 1958
Brick, common per M	37.843	0	—0.1
Lime, hydrated finishing, per ton, CL	38.174	+0.6	+3.7
Structural clay tile, 3x12x12", per M, 2,000 up*	185.98	+1.9	+1.3
Vitrified clay sewer pipe, std 12", per ft	1.375	+1.9	+5.5
Concrete sewer pipe, 12", per ft	1.339	0	+3.8

*Delivered, truck lots

†Lower price due primarily to cessation of heating charges

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
Apr.	745.78	156.34	516.61	146.85	585	169
May	751.57	157.56	518.62	147.42	674	195
Jun	757.31	158.76	521.09	148.13	661	191
Jul	762.52	159.85	524.29	149.03	705	204
Aug	764.44	160.25	525.62	149.41	575	166
Sept	773.47	162.15	535.02	152.09	541	156
Oct	775.30	162.53	536.53	152.51	446	129
Nov	774.12	162.28	534.96	152.07	384	111
Dec	773.81	162.22	534.79	152.02	466	135
1958 Average	**759.16**	**159.15**	**521.68**	**149.15**	**531**	**153**
1959						
Jan	778.28	163.15	536.23	152.43	460	133
Feb	778.75	163.25	537.25	152.72	472	136
Mar.	781.35	163.80	540.32	153.59	586	169
Apr.	784.41	164.44	542.93	154.33		

US to Prod Investment Overseas

- **How: By offering tax incentives, easier credit, more help in joint projects, more liberal antitrust interpretation.**
- **Why: Support for government aid is waning; business wants more help for its already expanding overseas operations.**
- **For construction: It means new business, but not necessarily for U. S. firms; and could narrow the consultant's role overseas.**

The Administration is about to launch a broad program aimed at stimulating private investment overseas. The program will have far-reaching implications for U. S. foreign policy, for the foreign aid program in particular, and for construction firms working abroad.

Behind the program is a report to the State Department this week. It covers ways in which the government could tempt more private capital overseas—particularly into economically underdeveloped areas. The report was prepared by Ralph I. Straus, of R. H. Macy Co., with the help of the Stanford Research Institute and of scores of business, academic and government experts.

Basically, what Mr. Straus is recommending is more tax incentives—but no tax cuts—for foreign investors, easier government credit for investors going abroad and more government financial participation with private entrepreneurs in joint projects overseas. Also he wants antitrust law to be interpreted more liberally as it applies to foreign investment corporations. Implementation of many of the key items appears certain.

For the construction industry the impact of the Straus recommendations is likely to be mixed. Any new investment involves construction at some point. But it's an open question how much of the new business generated would go to U. S. firms.

And note this: One proposal calls for giving American operating companies over-all managerial responsibility for surveying, building and initially operating entire industrial projects. This could curtail the role now played by engineering consulting firms as over-all advisors to foreign governments and firms on development programs.

On this point, the report says:

"We recommend that, where necessary to accomplish high priority projects, greater use should be made (in the aid program) of management contracts which centralize managerial responsibility for an entire project, including its operation for an initial period, in a single operating company . . ."

The report explains that:

"Present foreign aid contract regulations and techniques encourage a segmented approach to contracting. They encourage separate contracts for feasibility studies, architect-engineer services, and construction, as opposed to centralizing managerial responsibility for an entire project in a single company. These policies also lend themselves to the selection, as prime contractors, of architect-engineers and construction companies rather than companies with operating experience."

This recommendation, if implemented, could cost construction firms foreign aid contracts that they have been used to winning. Foreign aid expenditures for engineering services have run into many millions of dollars. This may become increasingly important as foreign competition forces American firms more and more into specializing in engineering studies and surveys as distinguished from actually building the dams, highways and factories abroad.

It's too early for construction executives to get really worried, though. It still isn't certain that the recommendation will be accepted and implemented by the Administration. Also there is a lot of doubt in Washington on how widely the suggested package contract technique can't be applied in practice.

U. S. investment abroad is already growing steadily—even without special government incentives. Many U. S. executives and official experts anticipate that sales from foreign operations of U. S. concerns will double in the next ten years. Exports probably won't rise more than 50% during the same period.

U. S. corporations risk their money abroad for many reasons. Profit margins frequently are higher—ranging up to 50% or more. Labor is cheaper. Profits from foreign operations mean the margin of over-all gain for a growing number of companies hard pressed by competition at home.

Big reason—perhaps the biggest—is the search for new markets or the drive to hold old ones. A foreign base of operations can put a U. S. manufacturer safely inside high or discriminatory tariff walls, such as those contemplated around the European Common Market.

From his foreign base, using cheaper skilled labor and sometimes drawing on cheaper raw materials, the U. S. manufacturer often can compete more effectively in world markets than he can through exporting from the U. S.

Increasingly he is finding he can import his foreign-made products into the U. S. market competitively. Heavy U. S. dollar losses to foreign countries this year and last reflect at least to some extent a decline in the competitive position of many U. S. exports. The reasons: Higher labor costs, regulated markets and in some cases inefficiency bred by protection from import competition.

Behind the sudden new interest in promoting private investment abroad is pressure from business and Congress. The Straus report was initiated by an amendment to last year's aid bill. The amendment called for a study of ways in which private business could be induced to play a larger role in the stepped up economic competition with the Sino-Soviet bloc in underdeveloped areas.

The reasoning behind the amendment and other similar moves is that most of the wealth and knowhow in the United States is in private hands, and that it should be more effectively tapped in

(Turn the page)

the all out struggle with communism.

There are other reasons. An ideological one is that government-to-government aid encourages state enterprise and in the long run works against the interests of private enterprise.

Practically, it is argued that support for government foreign aid is petering out and that ways must be found to replace it as far as possible with private capital before the aid program expires altogether.

The Administration buys some of this reasoning—but with strong reservations. It's against any government aid for foreign investors that would be so close to a subsidy as to remove the essential risk element in private investment. It is wary, for political reasons, of trying to force private investment on recipient governments. Memories of colonialism are still fresh abroad.

Finally, the Administration doubts that private investors in the foreseeable future will be willing or able to take on the sort of basic public works investment that must be carried out to provide a base for private enterprise.

One thing seems sure, though: There will be more emphasis on using government grants and loans to promote private enterprise, local and foreign, abroad. In particular, government agencies will be more reluctant to lend or grant money for projects that conceivably could be financed privately, directly or indirectly, with some form of government aid.

In the process of selling Congress on the national importance of more government backing for private foreign investors, the Administration risks giving ammunition to those who oppose the foreign aid program on the grounds that it can be supplanted by private investment. Mr. Straus was careful to deny that this was possible, but Congressmen may ignore his denial.

Important changes in administration of foreign aid also are proposed by Mr. Straus. For the long run, stimulating private investment overseas—if it works—could increase current heavy U. S. losses of gold and dollars to foreign countries and strengthen opposition to liberal trade and aid policies.

Nevertheless, the Administration will go along with many of the Straus recommendations, hoping against hope that it won't increase opposition to the aid program in the process.

The first concrete move will come within the next few weeks when the Administration will throw its weight behind a modified version of the foreign investment bill introduced in Congress by Rep. Hale Boggs (D., La.). This parallels closely the main tax incentive recommendations of the Straus report. Other Straus recommendations will be incorporated. With Administration backing the measure has a better than even chance of clearing Congress, if not this session, then next year.

It's impossible to guess just how much impact the Administration's new program may have in increasing private foreign investment.

Tax incentives, financial assistance and antitrust liberalization are only three factors—and probably marginal ones—that an investor takes into account in considering risking money abroad. Political climate and, above all, prospective profits are more important.

But there's no doubt that the new incentives being considered by the Administration would make foreign investment even more attractive than it is already and would benefit many individual investors, even if it did not stimulate an over-all increase in foreign investment.

Business and Congressional pressure on the Administration for the new incentive program reflects a basic revolution in the U. S. investment climate in the past decade. Until World War II U. S. investors traditionally looked primarily to the vast untapped resources of the U. S. itself.

Now, however, foreign investment has become big business. The old inward orientation of U. S. investors is breaking down. Look at the raw figures:

U. S. private business now has more than $28 billion invested directly in foreign enterprises compared to $12 billion in 1950, according to Commerce Department figures. That's just the book value of investments in enterprises more than 25% owned by Americans. The true value probably is closer to $50 billion. Sales of goods produced as a result of this investment totaled probably about $20 billion last year—nearly twice U. S. non-military exports.

Industrial Building Gains Speed

If construction hits a new second quarter record—as well it may (see p. 21)—industrial building will be a key factor.

The upturn in industrial building is accelerating and most key industries are playing a role.

Leading in contract dollars are the process and public utility industries. Of the $706.6 million in first quarter industrial building awards, process plant contracts accounted for $327 million. This is a 59% increase over 1958's first quarter. The number of contracts—93—is up 11% over a year ago.

Public utility construction contracts of $208.6 million are up 87% over one year ago, despite an 8% dip in the number of awards, from 25% to 23%.

Biggest percentage increases are shown by machinery and parts and radio-TV-electronics industries. Each more than tripled its volume of awards.

Major exceptions to the upward trend are metal refining and rolling, and railroads.

The sharp rise in proposed industrial plants will be reflected in the total of industrial awards this year. It means that industrial building contracts will probably go well over $2 billion.

Industrial Building Contracts by Industry—First Quarter

INDUSTRY	Dollar Value 1959	Dollar Value 1958	% Chg.	Number of Plants 1959	Number of Plants 1958	% Chg.
	(millions)					
All Industry	$706.6	$535.7	+ 32	458	368	+ 24
Above 1958 Dollar Volume						
Chemical process*	327.4	235.5	+ 39	93	84	+ 11
Public utilities	208.6	111.6	+ 87	23	25	— 8
Machinery and parts	37.3	12.2	+206	66	36	+ 83
Food	34.8	18.2	+ 91	85	49	+ 73
Automotive service	11.3	4.6	+143	21	14	+ 50
Aircraft	10.4	9.3	+ 12	21	12	+ 75
Automobile	10.4	8.3	+ 25	4	3	+ 33
Radio, TV, electronics	4.0	1.3	+207	5	3	+ 67
Wood	1.2	0.4	+200	5	2	+150
Refrigeration & cold storage	0.6	0.3	+120	3	2	+ 50
Below 1958 Dollar Volume						
General	37.7	44.0	— 14	107	120	— 11
Metal refining and rolling	21.4	86.7	— 75	16	6	+167
Textiles	1.3	2.3	— 45	8	8	0
Railroad	0.2	0.9	— 77	1	3	— 67
Foundries	0	0.1	—100	0	1	—100

*Includes aluminum production facilities

Blaw-Knox Concrete Paving spread used by McGeorge Contracting Company lays the first 5-inch for steel mesh on Interstate Route 91 near Little Rock, Arkansas. A second 5-inch completes the 10" slab.

from forms to finisher. . .

McGeorge Contracting uses Blaw-Knox Concrete Paving Spread on Interstate Paving Project

By use of coordinated Blaw-Knox Concrete Batching and Paving Equipment, McGeorge Contracting Company completed a three-mile section of Interstate Route 91 near Little Rock, Arkansas, within the allotted contract time. The company, long a leading highway and heavy construction contractor in Arkansas, chose the Blaw-Knox spread for this major concrete paving job.

A Blaw-Knox 200-bbl. Hi-cement bin served as a railhead transfer unit. The two-stop batch operation included a 400-bbl. Hi-cement bin and a P-3100 G aggregate bin set with a twin aggregate weigh batcher. Batch trucks moved dry material to the Blaw-Knox 34-E Dual Drum Paver. Running on 5,000 feet of Blaw-Knox 10-inch road forms was a Blaw-Knox concrete spreader, followed by a Model XE finisher equipped with the new Blaw-Knox quick adjustable screen.

Specially engineered Blaw-Knox concrete paving equipment has what it takes to turn out high production to the tightest specifications, at a profit. Your Blaw-Knox distributor has the details. Why not contact him?

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment . 300 Sixth Avenue . Pittsburgh 22, Penna.

USS TRI-TEN STEEL

saves $175,000

IN ILLINOIS RIVER BRIDGE

Five-span cantilever bridge, Peoria, Illinois, carrying two 26-foot roadways. Total length of spans—2,340 feet. Designer: State of Illinois, Dept. Public Works and Buildings, Division of Highways. Fabricator: Allied Structural Steel Cos. Erection by Industrial Construction Co.

$175,000 was saved by the use of USS TRI-TEN Steel in heavily stressed chords and diagonals, where it eliminated 850 tons of deadweight.

This spanking new Illinois River Bridge at Peoria takes advantage of the cost-saving features of high strength steel. USS TRI-TEN Steel was used wherever it would save money—and this was in most of the chord members and about 70% of the diagonals. These parts could be made thinner and lighter because of TRI-TEN Steel's minimum yield point of 50,000 psi. The bridge is all of 850 tons lighter than conventional construction would have been.

From 20 to 40% less steel was used in the high-strength low-alloy steel members. Less complicated members and fewer side plates was another consequence of using TRI-TEN Steel, leading to lower fabrication and erection costs—and, ulti-

mately, fewer maintenance problems. It is estimated that $175,000 was saved by using TRI-TEN Steel.

USS TRI-TEN Steel is particularly recommended for welded structures. It has good workability and superior resistance to atmospheric corrosion and meets all the requirements of ASTM Specification A242.

Other USS High Strength Steels in the 50,000 psi minimum yield point range include USS MAN-TEN which combines strength with economy and USS COR-TEN for strength with outstanding resistance to atmospheric corrosion. Where a very high yield strength steel is needed, our USS "T-1" Constructional Alloy Steel combines weldability with 100,000 psi minimum yield strength.

For complete information on any of these steels, call our nearest sales office or write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS, TRI-TEN, MAN-TEN, COR-TEN and "T-1" are registered trademarks

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United States Steel Supply – Steel Service Centers
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Contract Awards in March Rise 25%

Heavy construction contract awards of $1.6 billion in March were the largest for any month since the all-time high of July 1958. The total for March was also the best for that month since the record year of 1956. The total is 25% above February of this year.

Private mass housing and industrial building put zip into the private construction market. All private contracts in March totaled $887 million and outstripped public contract awards of $807 million. March was the second consecutive month in which private contracts topped public contracts.

Compared with February, private work was up 12% and public up 43%. And compared with March 1958, private contracts went ahead by 35%. Public contracts, however, were only 3% ahead of last year, with a 34% jump in federal projects more than offsetting a 5% drop in state and municipal awards.

The pick-up in private construction activity in recent weeks was most noticeable in homebuilding. Mass housing contracts of $351 million went into the books in March, the best March month in three years.

Coming up fast is industrial building, which recorded $323 million in new contracts during March. This was an 81% leap over February and 143% above a year ago. So far this year, nearly $707 million worth of industrial building contracts has moved to contractors.

Commercial building—offices, warehouses, stores and garages—also is perking up, although the $142 million in contracts during March was 27% below both this February and last March 1958. The first quarter total, however, was strong and is a sure sign of this category's direction (see story on page 21).

Biggest volume among public works projects during March came from building other than housing and highways. Schools, municipal power structures and state buildings brought March awards to $207 million. This is a 56% boost over February, but 10% short of the figure of one year ago.

Cost Indexes Hit Record Again

ENR's Construction and Building Cost Indexes are at new record high this month. The climb in the 20-Cities Indexes results from lumber-price increases and deferred wage increases.

The Construction Cost Index value for April is 784.41. This is 0.4% above March and 5.2% above April 1958. The Building Cost Index is at 542.93—0.5% above last month and 5.1% over one year ago. Both indexes are based on 1913 = 100.

Both Douglas fir and southern pine 2 x 4s, key lumber price indicators, rose an average of $2 per Mfbm in March. By the end of the month, however, there was a softening of demand and price reductions were recorded in Cleveland and New York.

Bulk cement prices are down four cents per bbl in New York and 11 cents per bbl in Baltimore because of rail freight rate cuts effective April 1.

The reductions are an attempt to win back cement shipment business lost to the trucking industry. No changes in cement prices are reported in Philadelphia and Boston, the other northeastern cities covered by ENR.

The freight rate picture generally bears watching for further adjustments. Both the railroaders and truckers are looking with some uneasiness at the toll rates placed into effect on the St. Lawrence Seaway.

But new wage increases are sure to add to construction costs. Deferred increases are now scheduled for some 400,000 trades union members this year. Many of these boosts will go into effect during the next three months.

Engineering Construction Contracts for March

Four Weeks—Thousands of Dollars (000 Omitted)

	March, 1959								Three Months Continental U. S. Cumulative			
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total Continental U. S.	% Change March '58 to '59	1959	1958	% Change '58 to '59	Canada March 1959
Public Works, Total	**62,415**	**139,553**	**121,685**	**86,453**	**235,469**	**161,309**	**806,884**	**+ 3**	**2,326,775**	**2,079,419**	**+12**	**32,990**
Waterworks	779	1,700	3,551	6,218	5,447	17,231	**34,926**	+54	**112,500**	37,519	+95	1,135
Sewerage	1,359	9,680	12,547	7,018	6,877	5,479	**42,960**	−19	**140,597**	145,011	− 3	1,229
Bridges	1,582	8,881	13,258	7,493	12,621	5,794	**49,629**	+48	**152,058**	101,607	+50	8,036
Earthwork, waterways	1,777	9,011	9,650	3,599	42,918	21,183	**88,138**	+156	**174,186**	166,276	+ 5	1,161
Streets and roads	7,599	41,030	32,129	11,696	71,968	36,261	**201,583**	−21	**620,740**	619,342		5,437
Buildings, Residential	2,427	12,887	4,691	10,010	16,943	8,643	**55,601**	−30	**136,110**	276,471	−51	600
Other	16,031	40,074	30,742	25,827	42,904	51,268	**206,846**	−10	**615,071**	570,231	+ 8	8,920
Unclassified	30,861	15,390	15,117	14,592	35,791	15,450	**127,201**	+77	**375,513**	142,982	+163	6,472
State & Municipal	56,302	123,437	88,615	58,559	142,784	120,901	**590,798**	− 5	**1,673,067**	1,653,122	+ 1	20,567
Federal	6,913	16,116	33,070	27,894	92,685	40,408	**216,086**	+34	**653,708**	424,297	+54	12,423
Private, Total	**41,605**	**241,354**	**120,181**	**123,147**	**239,120**	**72,035**	**837,442**	**+35**	**2,273,121**	**1,751,876**	**+30**	**45,157**
Bridges		150					**150**		**150**			
Buildings, Industrial	1,956	68,289	59,431	29,326	143,125	20,508	**322,635**	+143	**706,556**	535,728	+32	4,655
Mass housing	28,605	111,110	41,156	70,005	63,196	37,015	**351,087**	+27	**934,514**	628,313	+49	16,127
Commercial	10,739	61,805	15,816	21,442	19,239	13,232	**142,293**	−27	**526,234**	471,064	+12	24,375
Unclassified	285		3,778	2,374	13,560	1,280	**21,277**	+36	**105,667**	116,771	− 9	
Total Mar., 1959 4 weeks	**104,020**	**380,907**	**241,866**	**209,600**	**474,589**	**233,344**	**1,644,326***	**+18**				**78,147**
February 1959 4 weeks	93,020	404,709	258,727	142,701	251,018	164,294	**1,314,469**					229,294
March 1958 4 weeks	86,824	317,258	150,970	262,358	302,147	269,134	**1,397,691**					138,343
Three Months	**285,996**	**1,166,183**	**782,754**	**602,526**	**1,119,301**	**643,136**			**4,599,896***		**+20**	**307,441**
Three Months 1958	227,961	968,779	509,146	765,948	770,356	592,135				3,831,265		319,423
% Change '58 to '59	+25	+20	+55	−31	+45	+9						−4

* Add Alaska: 3 '59 $6,820 3 Mos '59 $13,649

ENR Starting News-Record reports contingent U. S. construction projects at the following minimum costs—Waterworks, Earthwork and irrigation, $25,000; other public works, $50,000; industrial buildings, $110,000; other buildings, $100,000.

At the bargaining tables . . .

Unions Again Order the 15-Cent Dinner

Construction industry collective bargaining is moving into the second quarter with a continuation of the long-term contract trend and annual wage increases ranging from 10 to 25 cents an hour.

There is also a noticeable emphasis in some areas on changes in hiring procedures and on union efforts to equalize wages on a regional basis.

Fringe benefits appear to be getting no more than the usual billing, with current interest about equally divided between new fringes and improvements in old ones.

• **New Jersey**—Largest of the recent settlements have taken place in central New Jersey, where bricklayers, laborers and carpenters in a relatively low-wage county (Monmouth) have won increases that will narrow the area wage differentials.

New three-year contracts for laborers and carpenters provide for a 25-cent wage increase this year, 20 cents in 1960 and 20 cents in 1961. Bricklayers, who also signed a three-year contract, will get annual increases of 15, 20 and 20 cents.

As a result, the new wage rates on May 1 will be $4.25 for bricklayers, $3.80 for carpenters, $3.00 for laborers Local 712 (which has no welfare plan) and $2.90 for laborers Local 345 (which has a 10-cent welfare plan).

Elsewhere in New Jersey building contractors are faced with demands from other local unions ranging from 20 cents to 60 cents an hour. Four unions are asking for a seven-hour day, two for show-up time and two for premium pay on power tools. Requests for new or improved pension and welfare contributions are also on the bargaining tables.

The problem of area rate differentials also has been raised in Arizona and Maine. Arizona ironworkers, who will seek a 40-cent increase over two years, want to equalize their rates with those of iron workers in California. And in Maine, contractors again face an operating engineers' demand for a regional contract that saddles them with Boston rates.

• **Colorado**—More modest increases than those won in New Jersey have gone to Local 9 of the operating engineers.

The Associated Building Contractors of Colorado have agreed to a wage boost of 20 cents an hour spread over two years. The first increase of 10 cents is retroactive to March 1.

Base pay of engineers operating heavy earthmoving and construction equipment was $2.90 an hour prior to the new contract.

• **Illinois**—Somewhat similar increases have come out of another batch of settlements in Illinois.

Two-year contracts calling for 10-cent raises each year have been reached by bricklayers and carpenters in Bloomington.

Carpenters in Springfield have agreed to a three-year contract that provides for a 35-cent wage increase—15 cents now and 10 cents in each of the next two years.

• **Oregon**—Meanwhile, units of the carpenters union have upset negotiations in Oregon, where a pile drivers' strike closed down construction on the uncompleted north shore cofferdam for John Jay Dam and on highway and bridge projects under construction throughout the state.

The Oregon Council of Carpenters and the Southwest Washington Council of Carpenters have agreed to a three-year contract that gives a 53-cent wage increase in three installments: 18 cents as of April 1, 18 cents next year and then an additional 17 cents in 1961.

Carpenters in Portland, however, have not accepted the agreement, which is slated to go before the members for ratification on April 18. Portland pile drivers, who claimed dissatisfaction with the hiring provisions, have also dragged their feet. Although their strike was called off after the governor of Oregon and the international union president interceded, the local will not vote on the new pact until April 12.

• **Some demands**—On other fronts, the Northern California District Council of Plasterers and Cement Masons have asked for an across-the-board increase of 40 cents and a nondiscriminatory union hiring hall or, as an alternative, an 80-cent raise. In either case the union also wants a 5-cent increase in health and welfare.

The current five-year contract with the Northern and Central California Chapters of Associated General Contractors contains a reopening clause on wages and health and welfare and provides for negotiating of hiring arrangements at any time. However, the AGC has protested the linking of the two issues.

The same employers are faced with Oakland teamster demands that include two weeks' vacation, eight paid holidays, seniority provisions and the rating of trucks by axles instead of by yardage.

Labor in Brief . . .

• **Unemployment compensation**—President Eisenhower has signed the bill extending the temporary federal unemployment benefit program to July 1. Meanwhile, the AFL-CIO has suggested a federal reinsurance fund to aid states suffering unusually high unemployment. The federation also wants national minimum benefit standards.

• **Self insurance**—A group of San Francisco employers and a teamsters local union have agreed to put the union's health and welfare fund on a self-insured basis. The union hopes it will increase by 10 cents or more the members' return on each dollar contributed.

• **Military projects hit**—A jurisdictional dispute between riggers and pipefitters over unloading of equipment used by pipefitters has slowed work at the $15-million Suffolk Bomarc Missile Base in New York. Pickets also appeared at the Navy's radio telescope project in Sugar Grove, W. Va., apparently protesting use of nonunion workers by a subcontractor, Nello L. Teer Co.

• **Prevailing wages**—The Minnesota Senate Labor Committee has voted not to renew the state's 1957 law requiring payment of prevailing wages on county highway projects involving federal funds. Critics call the law "dangerous centralization."

NLRB Hits Fabrication Clause

The National Labor Relations Board has ruled that a union that operates an exclusive hiring hall engages in a strike when it refuses to furnish workers requested by a contractor.

The ruling strikes a crucial blow at the fabrication clause in the national labor contract between the plumbers union and the National Constructors Association. It points up another legal pitfall in exclusive hiring arrangements, and it may lead to more constructive thinking on the knotty problems presented by secondary boycotts and hot-cargo clauses.

Under the fabrication clause, NCA members and the union agreed, as one of the "terms of employment," that piping under 2½ in. in diameter would be fabricated at job sites. Larger piping could be fabricated in a shop if the shop were organized by the plumbers union. The union reserved the right to refuse to handle piping not so fabricated.

The union has now been ordered by the NLRB to instruct its members in a Michigan area that they are free to violate the clause on any project being built by any contractor for Detroit Edison Co. It also has been ordered to make a violation of the clause possible by furnishing workers, on request, who have been instructed to disregard the clause if they want to.

The union has appealed the decision. It says the ruling plays havoc with its constitutional rights because it "denies freedom of contract" and "acquires involuntary servitude."

• **A turbulent history**—The Detroit Edison controversy has been in litigation for a long time.

It came to a head early last year. Members of Local 636 tried to exercise what was thought to be a contractual right by refusing to install a prepackaged turbine generator at a Detroit Edison project in River Rouge, Mich.

The generator, containing prefabricated piping, was furnished by Westinghouse Electric Corp. It did not comply with the fabrication clause because Westinghouse did not hire members of the plumbers union.

Contractor for the River Rouge project was United Engineers and Constructors, Inc., which is a member of NCA. The controversial generator, however, was purchased by Detroit Edison. United Engineers had attempted unsuccessfully to get Detroit Edison to tailor its purchasing policies to conform to the fabrication clause.

The upshot was that the international union instructed the local union not to work on the Westinghouse piping. Local union members on the job refused to handle it and the local union refused to furnish a new crew.

Both union groups were then charged with a secondary boycott—inducing employees to strike to force Detroit Edison and United Engineers to quit doing business with Westinghouse or other fabricators that do not hire members of the plumbers union.

• **Secondary boycott**—The NLRB upheld the charge, but it did not attempt to explore three basic questions that have plagued the courts for years:

- Was this a primary dispute with or a secondary boycott?
- Is the fabrication provision a hot-cargo clause and is it valid?
- If it is valid, what happens to the union's contractual rights?

But the board did come up with two significant pronouncements in making the facts fit the law. (Under the law, someone must "induce employees" to strike before a secondary boycott can occur.) The board said:

- Workers can be induced to strike by silence. (The president of the local union had remained silent when the men who refused to work on the piping said their refusal would continue until the union told them to go ahead with the work. The silence, said the board, induced the strike as effectively as "any words he might have uttered.")
- Workers on tap through an exclusive hiring hall are employees of a contractor within the meaning of the law even though they have not been referred or hired, and a refusal to refer them amounts to a strike induced by the union. (The board reasoned that the hiring hall gave the union such tight, continuous and certain control over manpower supply that it created the status of employment. A refusal to refer workers—who can be called employees even before they are hired—is the same as inducing a strike.)

The international union, pending the appeal, is instructing all its local unions that the national agreement is still in effect and that union members should protect their rights under the pact.

Final disposition of the case will affect more than the NCA agreement. It will also have a direct bearing on all labor contract clauses that set up a hot-cargo situation in which union members have the legal right to refuse to handle various types of materials.

Employers Form a Broader Base

Construction industry employer associations in eastern New York State have successfully undertaken an area-wide reorganization plan that promises to simplify and improve local collective bargaining.

The Albany and Schenectady Builders' Exchanges and the Troy Builders' Association merged in December to form Eastern New York Construction Employers, Inc. Since then, substantially all the individual union contractors in Amsterdam, Gloversville, Johnstown and Canajoharie have joined the association.

It is generally believed that the consolidation would have taken place eventually as the logical means of promoting the general interests of employers more effectively. But two labor developments that spelled the need for a united and better informed employer front gave impetus to the movement.

• One was reorganization of local carpenter unions into one district council and the negotiation of a council-wide labor agreement.

• The other was last year's ironworker decision to negotiate on an area-wide basis.

Except for affording a forum for information exchange and coordination, the reorganization will not materially affect contract negotiations still conducted on a local basis; here composition of the new association's bargaining committee will be tailored to specific situations.

But in area-wide negotiations, such as the upcoming one with the operating engineers, contractors will be in a more enlightened and effective position.

One association spokesman indicated the consolidation was inevitable, at least in the area of labor relations.

Local union affiliation into larger area groups, their access to the research facilities and assistance of international unions, and the growing intricacy of labor law have tended, he said, to put small local contractor groups in a difficult situation.

The new association has 260 members. Ansell Sweet of Schenectady is president and Leon Kromer, Jr., of Albany is managing director.

Contractors Win Dispute Over Prevailing Wage

Concerted action by contractors in Erie, Pa., has nipped in the bud a development that might have enabled a striking union to obtain, through the Davis-Bacon prevailing wage machinery, the rate it has sought in nine months of an unsuccessful strike.

The union—a local of the iron workers—struck members of the Erie Construction Council for a 25-cent wage increase June 18. The expired contract had carried a scale of $3.64. Some of the iron workers have obtained jobs with other contractors during the strike at $3.89. However, the majority of them, according to ECC, are employed by national contractors at $3.64 under national agreements.

In February ECC charged that the union had "erroneously" informed the U. S. Labor Department that the prevailing rate in Erie had become $3.89. It disputed the union claim. And the Labor Department has ruled that $3.64—the old rate—is still the prevailing rate for structural, ornamental and reinforcing iron workers, riggers and machinery movers.

ECC is now advising employers who have "overpaid" iron workers on Davis-Bacon work to demand reimbursement for the "overpayment" from the union.

Workers Idled by Lockout May Receive Compensation

Construction workers idled by an employer lockout during a labor contract dispute are entitled to unemployment compensation, according to an Ohio Bureau of Unemployment Compensation referee.

The ruling reverses a previous decision that disallowed claims filed by some 10,000 workers last Spring. The disallowance was based on the grounds that the work stoppage was caused by a labor dispute. Gist of the reversal is that non-striking workers who are locked out are not idled by a labor dispute of their making.

The stoppage occurred in the Cleveland area when employers shut down following a strike by the Asbestos Workers Union during joint collective bargaining negotiations. It lasted for seven weeks and idled more than 30,000 workers.

The new ruling, if upheld, will give benefits to only the 803 claimants who appealed the earlier ruling and kept their claims alive by filing weekly claims.

The Building Trades Employers' Association, which was involved in the lockout, is appealing the ruling.

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: April 23, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 23rd day of April 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 334 Broadway, Albany 1, New York						
Essex (Rte. 22)	R.C. 59-30	Ticonderoga-Montcalm Landing S.H. 8073	1.19	Asphalt Concrete Pavement	$3,000 Plans $5	$51,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Madison & Oneida (Rte. 31)	FARC 59-33	Oneida-South Bay, Pt. 2, S.H. 1361 Canastota-South Bay, S.H. 812 Oneida Valley-State Bridge, Pt. 1 and Pt. 2, S.H. 8367 State Bridge-Verona Station, S.H. 8132 Project F-5102(2)	7.12	Asph. Conc. Type 1A Pavt. Prestressed Conc. Beam Bridge 3 Span 178.5'	$67,000 Plans $5	1,214,000
Oneida (Rte. 12)	FARC 59-12	Boonville-Town Line-McKeever, S.H. 5248 Alder Creek-Town County Line, S.H. 5307 Boonville-Port Leyden Pts. 1 & 2, S.H. 8172 Project F-1157(1)	9.39	Asph. Conc. Pavt. = 9.33 Miles; Misc. Work = 0.06 Mi.; Widen Exist. Br. 28' Sp. I-Beam	$87,000 Plans $5	1,586,000
DISTRICT No. 3, Earle E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga (Rte. 31B)	FARC 59-28	Weedsport-Elbridge, S.H. 9075 Project F-5341(1)	0.38	Asph. Conc. Type 1A Pavt. = 0.36 Miles; Misc. Work = 0.02 Mi.; Pres. Conc. Beam Bridge 60' Span	$9,500 Plans $5	163,000
Cortland (Rte. 11)	FARC 59-20	Homer Village-Clinton Street, S.H. 1636 Project F-215(5)	0.26	Asph. Conc. Type 1A Paving Pres. Conc. Beam Bridge 41.5'	$9,000 Plans $5	160,000
Tompkins (Rte. 96B)	FARC 59-18	Ithaca-Danby, Pt. 3, S.H. 5211 Project F-139(4)	4.34	Asph. Conc. Type 1A Pavement	$46,000 Plans $5	830,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus & Erie	FASS 59-10	Gowanda Village-Aldrich Street, Pts. 1 and 2 Project S-4141(1)	1.37	Asph. Conc. Pavt. = 1.35 Mi.; Misc. Work = 0.02 Mi.; Comp. I-Beam, Cont. Susp. Br. 4 Span 316'	$40,000 Plans $5	733,000
Chautauqua (Rte. 5)	FARC 59-30	Silver Creek Connection, S.H. 52-4 (Howard St. Bridge) Project F-458(12)	0.08	Asph. Conc. = 0.04 Mi.; Misc. Work = 0.04 Mi.; Pres. Conc. Beam Br. 2 Span 101'	$7,000 Plans $5	125,000
Chautauqua (Rte. 5)	FASS 59-11	Frewsburg-Clarks Corners Co. Rd. No. 60 Project S-469(2)	0.77	Bit. Double Surf. Treat Pavt. = 0.73 Mi.; Misc. Work = 0.04 Mi.; Pres. Conc. Beam Bridge 42.6'	$11,000 Plans $5	204,000
Erie (Rte. 20)	FARC 59-27	Transit Road, Pts. 1 & 4, S.H. 9217 Project F-1029(8)	0.20	Asph. Conc. Type 2A Pavt. = 0.13 Mi.; Misc. Work = 0.07 Mi.; Pres. Conc. Beam, Br. 2 Spans 120'	$7,000 Plans $5	130,000
Erie (Rte. 5)	R.C. 59-31	Athol Springs-Walden Cliffs, S.H. 5307	3.53	Asph. Conc. Pavt.	$20,000 Plans $5	363,000
Niagara (Rte. 18)	R.C. 59-32	Youngstown-Olcott, Pt. 1 and Pt. 2 S.H. 530 A-5324	3.42	Asph. Conc. Pavt.	$15,000 Plans $5	264,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Chemung (Rte. 14)	FASH 59-7 FARC 59-29	Horseheads-Cayuta, Pt. 1 Horseheads-Cayuta, S.H. 5412A Project F-5047	3.29 1.52 Acc. —	Asph. Conc. Pavt. = 3.29 Mi.; Access = 0.63 Mi. Asph. Conc. Pavt. and 0.89 Mi. Cem. Conc. Pavt. = 3 Comp. W-F Beam Brs. 4 Span 247.5', 2 Span 137' and 2 Span 134'; Widen Exist. 32' Sp. R.C. Closed Box Br.	$105,000 Plans $5	1,894,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Chenango (Rte. 12)	FARC 59-24	Greene-Oxford, Pt. 2, S.H. 8002 Norwich-Oxford, S.H. 5414 Project F-878(1)	5.25	9" Cem. Conc. Pavt. 24' Wide = 4.82 Mi.; Asph. Conc. Pavt. = 0.42 Mi.; Misc. Work = 0.01 Mi.; Pres. Conc. Beam Br. 1 Span 20'; Widen Exist. I-Beam Br. 42' Span	$90,000 Plans $5	1,638,000
Sullivan (Rtes. 17 & 42)	FAIS 59-5	Bloomingburg-Monticello, Pt. 2, S.H. 5457, 5457A Monticello Village-Broadway and Jefferson St., S.H. 5490 Monticello-Liberty, Pt. 1, S.H. 5035 Monticello-Woodbourne, Pt. 1, S.H. 8153 Project F-195(14)	6.65	Traffic Signs & Delineators	$8,000 Plans $5	149,000
DISTRICT No. 10, M. J. Cioca, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx, Nassau, Queens, Richmond, Westchester & Int. Exp. (Rte. 495)	FICBI 59-2P FITNI 59-1P	Interstate Route Connection 513, Cont. 1 Cross Bronx Expressway and Throgs Neck Expressway Project I-1112-12	2.71 5.01 Acc. —	9" Cem. Conc. Pavt. with Carb. Black 2 @ 36' Var. Wide = 2.53 Mi.; Misc. Work = 0.18 Mi.; Acc = 4.55 Mi. Asph. Conc. and 0.46 Mi. Cem. Conc. Pavt. = 6 Hy. Sep. Comp. Steel Girder 1 Sp. 225', 3 Sp. 113.2', 2 Sp. 017.5', 3 Sp. 168.8', 2 Span 166' and 2 Span 150'	$100,000 Plans $10	7,041,000
Suffolk (Rte. 27A)	FARC 59-26	Amityville-Babylon, S.H. 604 Project F-874(5)	0.32	Asph. Conc. Pavt. = 0.12 Mi. Drain. & Misc. Work = 0.20 Mi.	$7,000 Plans $5	131,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 220, Prevailing Rate of Wage of Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set in good condition, within 30 days of award, or rejection of bids. A refund for all other sets in good condition, similar in all respects, returned within a similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the State of New York, Commissioner of Taxation and Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders."

The right is reserved to reject any or all bids.

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OFFICIAL PROPOSALS

Republic of Iraq Development Board & Ministry of Development Kut Highway Bridge—Kut Contract No. B/13 (1959).

The Development Board and Ministry of Development invite tenderers from experienced Bridge Engineer firms and contractors for the construction, together with the approaches, of steel plate girder type highway bridge approximately 382 meters long over the Tigres at Kut, Iraq.

Full information regarding this tender can be obtained on or after 28th February 1959 from the Ministry of Development, Baghdad, Iraq and from the nearest Iraqi diplomatic representative and from the offices of Sir Bruce White, Wolfe Barry and Partners, 1 Lygon Place, Grosvenor Gardens, Westminster, London, S. W. 1.

All tender documents are to be submitted in English to the Ministry of Development, D. G. Legal Affairs and Contracts on or before 12 noon, local time on the 18th June 1959.

Minister of Development.

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Bids: April 21, 1959

Contract BP-502.261

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BROOKLYN-PORT AUTHORITY PIERS
TEST PILES

Sealed proposals for driving and loading test piles between existing Piers 22 and 24 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 21, 1959, at which time said proposals will be opened and read in Room No. 1105.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 9, 1959

Bids: April 30, 1959

Notice to Bidders

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y. Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T., April 30, 1959 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U.S.-73 for
New Sixty Foot Gates, Associated Electrical and Mechanical Equipment at Guard Gate 1 and Guard Gate 2, and New Bridge and Approaches at Guard Gate 2, Waterford, Saratoga County, New York.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.

(b) Department of Public Works, 270 Broadway, New York City, N. Y.

(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U.S.-73 may be examined and obtained at the office of Mr. G. L. Nickerson, 253 Broadway, Albany, New York.

The deposit for Plans and Proposal Forms for Contract U.S.-73 is $25.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U.S.-73 is confidential and will be made known at the time of receiving bids.

Proposals for Contract U.S.-73, must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5477) will be received at Fargo, North Dakota, until 10 a.m., Central Standard Time, May 7, 1959, for furnishing labor and materials for constructing foundations and furnishing and erecting steel towers for Bismarck-Jamestown 230-Kilovolt Transmission Line No. 2, Transmission Division, North Dakota, Missouri River Basin Project. Location in Burleigh, Kidder and Stutsman Counties, North Dakota. Principal items are 424 bodies—Furnishing 50, 60 and 80-foot steel towers of various types; 420,000 pounds—Furnishing 60 and 80-foot steel towers of various types; 868,000 pounds—Furnishing tower leg extensions; 448 towers—Erecting 50, 60, and 80-foot steel towers of various types; 3,200 cu. yds. Concrete in footings; and other work. Completion time 480 days. For particulars, address Bureau of Reclamation, P. O. 2553, Billings, Montana; P. O. Box 1993, Fargo, North Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

General Services Administration, Public Buildings Service, Washington, D. C.—Sealed bids for construction (except elevator plants) of Federal Office Building, Richmond, Virginia, will be received until 2:00 pm, EDT May 15, 1959 in Rm. 7128, GSA Regional office Building, 7th & D Sts, S. W., Washington 25, D. C., and then publicly opened in Rm. 7128 at above address. Upon request, Public Buildings Service, Rm. 1306, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C. Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $75.00 for each set. Deposits will be refunded for such sets if returned in good condition within fifteen days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

General Services Administration, Public Buildings Service, Washington, D. C.—Sealed bids for construction (except elevator plants) of National Library of Medicine, National Institutes of Health, Bethesda, Maryland, will be received until 2:00 pm EDT May 5, 1959 in Rm. 7128 GSA Regional Office Building, 7th & D Sts., S. W., Washington 25, D. C., and then publicly opened in Rm. 7128 at the above address. Upon request, Public Buildings Service, Rm. 1306, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C., EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $75.00 for each set. Deposits will be refunded for such sets if returned in good condition within fifteen days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5478) will be received at Albuquerque, New Mexico, until May 6, 1959, 10 a.m., Mountain Standard Time, for furnishing labor and materials for channelization of the Rio Grande, Belen area, San Juan Feeder Canal, New Mexico, Middle Rio Grande Project. Location near Belen, New Mexico. Principal items are 515,000 cu. yds. excavation; Lump sum, cleaning existing drain; 1,256 lin. ft. corrugated-metal pipe; 177 lin. ft. tunneling with liner plates; 1,600 units, metal jetty units; and other work. Completion time 275 days. For particulars, address Bureau of Reclamation, P. O. Box 254, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: May 14, 1959.

Boice Drain
Drainage District No. 2494

NOTICE OF LETTING OF DRAIN CONTRACT AND REVIEW OF APPORTIONMENTS

NOTICE IS HEREBY GIVEN, That I, HENRY V. HERRICK, County Drain Commissioner for the County of Wayne, State of Michigan, will now and until 11:00 A.M. E.S.T. on THURSDAY the 14th day of May A.D. 1959, receive sealed bids for the Cleaning Out, Relocating, Widening, Deepening, Straightening and Tiling of a certain drain known and designated as BOICE DRAIN, Drainage District No. 2494, located and established in the Townships of Romulus and Nankin and the Village of Wayne, Wayne County, Michigan, in the Office of the Wayne County Drain Commissioner, 523 Cadillac Tower, Detroit 26, Michigan, at which time bids will be publicly opened and read by Mr. Henry V. Herrick, the Wayne County Drain Commissioner.

Said Drain consists of approximately 11,000 lineal feet of 12" to 108" diameter sewers in open cut and tunnel together with junction chambers, manholes and appurtenances according to drawings and specifications prepared by Brenner and Brenner, Engineers of Wayne, Michigan.

In the construction of said drain, the following quantities and character of tile or pipe will be required:

1,08 L.F. of 108 inch R.C. Pipe Sewer ASTM C-76-2
487 L.F. of 102 inch R.C. Pipe Sewer ASTM C-76-2
223 L.F. of 84 inch R.C. Pipe Sewer ASTM C-76-1
1100 L.F. of 60 inch R.C. Pipe Sewer ASTM C-76-F
380 L.F. of 36 inch R.C. Pipe Sewer ASTM C-76-1
25 L.F. of 24 inch Concrete Pipe
30 L.F. of 12 inch R.C.P. Sewer ASTM C-76-2
35 L.F. of 12 inch Clay Pipe ASTM C-200
2 each M.H. on 108" & 102" Pipe
6 each M.H. on 84" & 60" Pipe
7 each M.H. on 36" and under
2 each Transition Chamber
3 each Standard Catch Basins
1 each Headwall at River
1 each Inverted Syphon and Chambers
6 each Special Inlets

Said job will be let in accordance with plans now on file with the other papers pertaining to said Drain in the Office of the County Drain Commissioner for the County of Wayne, to which reference may be had by all parties interested, and bids will be made and received accordingly. Contract will be made with the lowest responsible bidder, for the entire job, who shall give adequate security for the performance of the work. I hereby reserve the right to reject any or all bids, waive any irregularities in bidding, and or to adjourn such letting to such time and place as I shall publicly announce.

The Drain Commissioner shall have the right to hold all bids for a period of One Hundred and Fifty (150) days after the opening thereof. No bidder shall have the right to withdraw his bid during such time.

The Drain Commissioner shall, within the period of 150 days, herein provided for the holding of bids, obtain the approval of the Wayne County Board of Auditors to the awarding of the contract to the lowest responsible bidder, and shall notify such bidder of his award of the contract. The Drain Commissioner shall be given 150 days from the date of receipt of bids to sell bonds in an amount sufficient to pay for this project, it being understood that if the Drain Commissioner shall not have marketed bonds in an amount sufficient to pay for this project within such 150 day period, no contract shall be executed. If within such 150 day period the Drain Commissioner shall successfully sell bonds in an amount to pay for the project, the Drain Commissioner shall forthwith notify the successful bidder of such sale and a contract with the successful bidder, shall be executed within ten (10) days from the date of notice of the sale of bonds. The bid of the successful bidder, and the bond securing the same, shall remain in full force and effect until the contract is executed. If the bonds hereinbefore required to be sold are not marketed within the period provided above, the bid shall be deemed to be null and void and the bid deposit shall be returned to the successful bidder.

The 150 day period provided above for the sale of bonds and the giving of notice thereof may be extended from time to time by mutual agreement between the successful bidder and the Drain Commissioner.

The successful bidder shall not be required to execute performance bond, material lien bond, or provide the insurance herein otherwise required until he shall first have been notified of the sale of the bonds by the Drain Commissioner, and upon receipt of such notice, the successful bidder shall be required to execute and deposit such bonds and insurance as are required by the terms of the contract at the time of the execution thereof.

Copies of the plans and specifications may be secured from the Office of the Drain Commissioner of the County of Wayne, Michigan at 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five Dollars ($25.00), CHECK ONLY, will be required on each set of plans, which will be refunded upon their return in good order within thirty (30) calendar days after the opening of bids.

Any person desiring to bid on the above mentioned work will be required to deposit with the County Drain Commissioner a certified check or bank draft payable to the Wayne County Drain Commissioner, or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to five percent (5%) of the bid, shall be submitted with each bid.

The payments for the above mentioned work will be made as follows: IN CASH, FROM THE RECEIPTS OF THE SALE OF BONDS. Contractor may draw up to 90% of work completed from time to time and upon the approval of the Engineer. Taxes will be spread in Thirty (30) installments, First installment, December, 1959. Dated this 24th day of March A.D., 1959

HENRY V. HERRICK
County Drain Commissioner for the County of Wayne

Bids: April 23, 1959.

Power Authority of the State of New York
Niagara Power Project
Advertisement for Proposals for the Furnishing and Delivery of High Voltage Instrument Transformers for Niagara Switchyard
Specifications No. PA-N-25019
Niagara Contract No. NP26

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f. o. b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of 115 KV and 230 KV Instrument Transformers for the Niagara Switchyard in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 23rd day of April, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 73, 52, or 125 High Voltage Instrument Transformers in accordance with the bidding schedules.

Delivery of the High Voltage Instrument Transformers will be required beginning on or before February 15, 1960.

Plans, Specifications, and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Ebl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the maximum gross sum bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

OFFICIAL PROPOSALS

Bids: May 30, 1959.

Republic of Iraq
Ministry of Interior
Directorate General of Municipalities
Notice No. 38

TENDER FOR CONSTRUCTION OF ANAH AND RAWAH NEW WATER SUPPLY SCHEME

Tenders from constituted qualified engineering firms with experience in public works of magnitude are invited by the Directorate General of Municipalities, Ministry of Interior, for the supply and erection of two clarifying tanks with mechanically operated sludge-scrapers, flocculating tanks, flush mixers, alumina dosing apparatus, horizontal rapid pressure filters, air blowers, gaseous chlorinators with platform weighing scales, four electrically operated high lift pumping units, four electrically operated low lift pumping units, switch boards, cables, Venturi meter and recorder, 2 welded steel plate elevated service tanks, electrically operated water level recorder, suction main, pumping mains, sections of twin pumping mains in submerged canal crossing, pump and filter house building, overhead gantry crane, electric lighting, sewage disposal system and all other appendages, connections and ancillary works in the new water supply scheme for Anah, Ramadi Liwa of 720,000 gallons per day capacity according to the General Conditions and Specifications which can be obtained from the Accounts Section of the said Directorate on production of a valid Chamber of Commerce Certificate or from the Embassy of Republic of Iraq or Legation in Foreign countries, on the respective payment of the sum of ID. 10,000 or equivalents that is $28.00 for each copy or for two copies.

Tenders should be submitted by registered post in sealed envelope directly addressed to the Directorate General of Municipalities, Baghdad, and marked "Tender for Anah and Rawah Water Supply Scheme".

Closing date of tender—12 noon on Saturday, 30th May, 1959.

MINISTER OF INTERIOR

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

The opening dates shows in the Official Proposals printed in the March 19 issue were inadvertently interchanged. The correct dates of opening of bids are as follows: May 14, 1959, for Invitation for Bids No. YS-1-2, Refrigeration Equipment; and May 28, 1959, for Invitation for Bids No. YS-2-5, 1.25 Meter X 6.80 Meter High Pressure Gates and Conduit Linings.

M. L. N. Kambhu
Director General
Royal Irrigation Department

Bids: May 11, 1959

Grand Trunk Western Railroad

Overhead Bridge to carry 139th Street over Tracks of Grand Trunk Western and Indiana Harbor Belt Railroads, Blue Island, Illinois.

Sealed proposals for the construction of an Overhead Bridge to carry 139th St. over the tracks of the Grand Trunk Western Railroad and Indiana Harbor Belt Railroad will be received by the Grand Trunk Western Railroad, 131 W. Lafayette St., Detroit 26, Michigan from bidders until 12:00 o'clock noon on May 11, 1959.

Plans, specifications and Form of Tender may be obtained from the office of Mr. C. J. Morris, Chief Engineer, following receipt of $100 deposit per set, which deposit will be refunded on request upon return of said plans and specifications in good condition. Proposals shall be submitted, marked as indicated upon the Form of Tender provided and accompanied by a certified check in the amount of five (5) percent of the bid. The accepted bidder will be required to execute performance and lien bonds and obtain insurance as provided in the contract documents.

The Grand Trunk Western Railroad reserves the right to reject any or all bids.

C. J. Morris
Chief Engineer

OFFICIAL PROPOSALS

Bids: April 23, 1959.

Contract O&M-515

THE PORT OF NEW YORK AUTHORITY
PETERBORO AIRPORT
MAIN ROOF REPLACEMENT
HANGAR NO. 3

Sealed proposals for furnishing all labor, material and equipment for removing the existing metal roofing and furnishing and installing a wood deck and built up mineral surfaces roofing on the main roof of Hangar No. 3 at Teterboro Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 AM Thursday, April 23, 1959, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 9, 1959

OFFICIAL PROPOSALS

Bids: May 12, 1959

Contract PN-560.004

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 197, 198, 261 & 262

Sealed proposals for the construction of four cargo distribution buildings at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 12, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.
THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 9, 1959

OFFICIAL PROPOSALS

Bids: April 21, 1959.

Contract O&M-502

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
ADDITIONAL TRANSFORMERS
EAST PENTHOUSE ROOF

Sealed proposals for furnishing all labor, material and equipment for installation of additional transformers on the east penthouse roof of the Port Authority Building, 111 Eighth Avenue, New York 11, New York, will be received at the office of the Department of Purchase and Administrative Services, of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Tuesday April 21, 1959, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 9, 1959

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

APRIL 23RD ISSUE CLOSES APRIL 13TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Ads. Dept. of this publication
Send to office nearest you
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Civil undergraduate engineering faculty assistance needed at ideal New England seacoast college located one hour from Boston. Send resume to Bradford Durfee College of Technology, Fall River, Mass.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Traffic Engineer—Immediate opportunity for a graduate Civil Engineer with three years' professional experience. Annual salary $7320-8880. Address experience resume to Kern County Personnel Department, 1805 Chester Ave., Bakersfield, California.

Civil Engineer—Registered Professional Engineer with experience in municipal street and sewer design. Beginning annual salary approximately $7075.00 with increase at the end of the first six months. Annual 5% increase each year for next three years to final salary after three and one half years of approximately $8430. Normal fringe benefits. Submit resume and references to Director of Public Service, City of Middletown, Ohio, P. O. Box 530.

• *POSITIONS VACANT*

Superintendent—Water and Sewerage Department—wanted, with minimum of 5 years administrative experience in operating water system and or sewage disposal systems. Engineering training desirable. New Sewage Treatment Plant nearing completion. Salary range $6,658.00 to $7,158.00. Send resume of experience and application to H. B. Vasey, City Manager, City Hall, Mankato, Minnesota.

Mechanical & Electrical Engineers—Wanted by progressive Paper Mill located in northern half of the lower penninsula of Michigan. Please furnish resume stating education, experience and salary requirements. P-1324, Engineering News-Record.

Young Man, at least 2 yrs. college engineering, ability to use transit and read prints. Willing to work hard in mud and dust. Must be able to take command. Understudy to foremen, sewer, water and road work. Work in Dayton, Ohio area. Write P-1365, Engineering News-Record, stating full particulars.

Engineers experienced in building construction wanted by long established central Illinois builder who has openings for two quantity survey engineers and one cost engineer. Salary commensurate with ability. Complete education, experience data and salary expected should be furnished in first reply. P-1346, Engineering News-Record.

Estimator—At least five (5) years experience estimating institutional, commercial and industrial construction under our Chief Estimator in Ohio-Michigan area. Graduate Engineer preferred but not necessary. Salary commensurate with experience. Good opportunity for right man. P-1320, Engineering News-Record.

• *POSITIONS VACANT*

Bridge Design engineer, experienced in designing steel and concrete bridge structures, Tennessee. Give resume, education, experience, reference and salary expected. All replies confidential. P-1363, Engineering News-Record.

Experienced Reinforcing Steel Detailer. Excellent starting salary and usual benefits. New office and Plant under construction. Our employees know of this advertisement. P-1080, Engineering News-Record.

Wanted—Experienced and competent engineers for design or and supervision of construction of water works, sewerage, water treatment and sewage treatment plants. Permanent position. State age, experience, education, salary required. P-1398, Engineering News-Record.

Engineer—Job Supt. Opening with central Illinois contractor. Industrial-Commercial. Profit sharing, bright future. Give education, experience and salary in reply. J. L. Wroan and Sons, Inc., Normal, Illinois.

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Please send complete information on experience, references, salary requirements, and availability. Indianapolis Power & Light Co., 25 Monument Circle, Indianapolis 6, Indiana, Employment Division.

(Continued on the following page)

ENGINEERS

OVERSEAS

DAM ENGINEER
POWERHOUSE ENGINEER
on
MULTI-PURPOSE DAM PROJECT in THAILAND

Require qualified engineer with responsible construction experience in placement of reinforcing steel, mass concrete pours, mass concrete cooling on large dams or other mass concrete projects. Degree preferred but not essential. Must pass physical examination and security investigation.

- EXCELLENT SALARY
- OVERSEAS BONUS
- COMPLETION BONUS
- EXTRA VACATION ALLOWANCE
- QUARTERS & SUBSISTANCE
- MEDICAL CARE & INSURANCE

Write fully, include complete salary information to:

SVERDRUP & PARCEL INTERNATIONAL
c/o SVERDRUP & PARCEL, INC.
915 Olive Street, St. Louis 1, Mo.

WANTED
APPLICATIONS FROM

ENGINEERING PERSONNEL

HIGHWAYS
BRIDGES
ARCHITECTURAL

Openings in Pennsylvania, Ohio, Maryland, West Virginia & Mississippi

DESIGNERS
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FIELD ENGINEERS
INSPECTORS
CHIEFS OF PARTY
INSTRUMENTMEN

Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume to Personnel Department

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS

Baker Building
Rochester, Pennsylvania
or
Northside Station, Box 9997
Jackson 6, Mississippi

PURCHASING AGENT

Having opening for experienced and well qualified Purchasing Agent in office of leading Southern California Building Contractor. Must be graduate Engineer and competent at placing subcontracts. Send Resume

F. E. YOUNG CONSTRUCTION CO.
2141 MAIN ST., P.O. BOX 2872
SAN DIEGO 12, CALIFORNIA

DISTRICT SALES REPRESENTATIVE

Rapidly expanding drilling equipment manufacturer needs district representatives for New York, Philadelphia, Atlanta, Birmingham, Chicago and Detroit.

Must be graduate civil or soils engineer, now traveling extensively, with experience in soils mechanics, automotive and construction equipment, to manage sales and call on civil service offices, engineers, laboratories, and contractors.

Opportunity for advancement to top management.

P-1306, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Heavy Construction SUPERINTENDENT

Our expanding Heavy Construction Division is considering applications for a superintendent in work involving pile driving, dock construction, bridges, locks and dams in locations throughout the South. Write fully, giving education, past experience, references, availability, salary requirements and personal data to

Personnel Director

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Alabama

SUPERINTENDENT

To manage shop for structural steel fabricator and vessel builder. Must know metal fabricating, machining and all kinds of welding processses. Engineering graduate preferred. Requires energetic man—cost conscious—with ability to lead 150 man force. Salary open.

Reply W. W. Smith, General Manager

TOWER IRON WORKS INC.
50 Borden Street Providence, Rhode Island

ESTIMATORS

Have openings for recent graduate Engineers in office of leading Southern California Building Contractor as Estimators. Prior experience unnecessary.

Send Complete Resume

F. E. YOUNG CONSTRUCTION CO.
2141 MAIN ST., P.O. BOX 2872
SAN DIEGO 12, CALIFORNIA

• *POSITIONS VACANT*
(Continued from preceding page)

Heavy construction Firm, primarily highway, interested in employing a person of executive caliber, experienced in accounting control systems, inter-department and field coordination and development of policies and procedures. Outstanding opportunity for right man. Salary commensurate to proven ability. Submit detailed resume, photo and availability. Box 308, Circleville, Ohio.

Estimator—Purchasing Agent — Expeditor— graduate CE—age limit 32, with 4 years minimum field experience for well known prestressed concrete organization. Salary open. Location New York City. Send resume with recent photograph and salary expected to P-1386, Engineering News-Record.

Technical director for trade association in building products field. Office N.Y.C. Must be civil or structural engineer with knowledge of lightweight construction methods. Will have charge of product development and research, preparation of technical information, and represent assoc. at technical meetings. Travel involved. Salary $8000-9000. Send complete resume. All applications held in strict confidence. P-1389, Engineering News-Record.

Engineers with extensive experience in the operation and maintenance of complex utilities systems are needed by the Air Defense Command at salaries starting at $7510 and $8810 a year. The openings are at electronic air defense installations and Division headquarters in the Southern and North Central parts of the country. The power, heat and air conditioning equipment in Sage installations is large and complex and includes diesel generating equipment operated in parallel, power plant switch gear equipment, high pressure fire tube steam boilers with associated equipment, refrigeration and air conditioning equipment of over 100 ton capacity, and other complicated equipment used in heating, ventilating and controls systems. Engineers employed in a Division headquarters will function in a staff capacity in such fields as Electrical, Mechanical (Heating, Air Conditioning, Diesels), Civil and Civil Planning, and General (Structural, Sanitary, Paving) Engineering. Inquiries about these positions and applications should be directed to the Director of Civilian Personnel, Headquarters Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado.

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Project Manager Registered Engineer with extensive experience heavy construction Latin America—available immediately. PW-1268, Engineering News-Record.

Project Manager. Proven Record. 23 years heavy construction experience. U. S. or foreign. Available shortly. PW-1251, Engineering News-Record.

Estimator-Construction Engineer. B.S.C.E., 20 years heavy and industrial construction. Will relocate. PW-1248, Engineering News-Record.

Construction Executive and General Superintendent, 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Soil Engineer. Graduate Degree. Soil Mechanics & Foundations. Ten years experience—soil investigations, design & construction. PW-1330, Engineering News-Record.

Construction Engineer with nationwide firm desires change. Age 29. Supervisory experience on industrial and commercial buildings. Some earth work. No degree, but lots of experience. Will relocate stateside or foreign. PW-1426, Engineering News-Record.

(Continued on opposite page)

• *POSITIONS WANTED*
(Continued from opposite page)

Chief Estimator: Grad. CE. Reg. P.E. with 10 yrs. Constr. exper., includes 5 yrs. as field super. Proven ability and knowledge in purchasing and contracts. Qualified to assume full responsibility. PW-1350, Engineering News-Record.

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Construction Manager: Graduate C. E., Age 34, qualified in all phases of building construction management. Seeks position with responsibility preferably in Northeast U. S. Presently employed. PW-1388, Engineering News-Record.

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Field Engineer, 24, BSCE. 2 years experience in highway and structural design. Desires position as Asst. Resident Engineer or Contractors man. PW-1390, Engineering News-Record.

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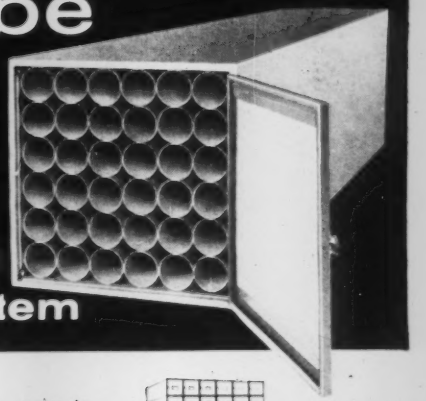

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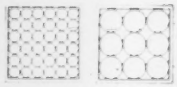

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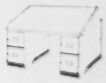

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Day's Work for a Day's Pay

In construction, productivity is a word without a generally accepted meaning. The "goods and services produced in an hour of work" of the U. S. Labor Department's definition of productivity are not as readily measured in the processes of construction as they are in manufacturing. This was stressed repeatedly by employers of construction labor contacted in a recent survey on productivity and wages (ENR Apr. 2, p. 21).

But this difficulty of definition does not make productivity any less important for the construction man. It may not tie directly to wages, but it surely applies to costs. Indeed, one astute contractor observed that he bids on it.

Every bidder on a given construction job prices in advance the planned and specified finished product. Costs of materials, money and machinery needed to do the job may in some instances become more or less standard items. There are other instances, of course, where availability of one or another of these three elements can be the deciding factor in bidding or completing the job. But frequently the manpower element is the critical factor. And with hourly wages fixed items, the labor variable reduces to man-hours it will take to get the job done.

The constructor may not describe his relating of the job to man-hours he'll take to do it as "productivity," but he certainly considers it important. He will analyze all known methods—and often devise some new ones—in an effort to do each phase of the work with the least expenditure of manpower. He will schedule all the productive work in advance and strive to reduce non-productive work around the job to a minimum. He will make accurate work assignments and attempt to forestall unnecessary labor grievances. He will size his work crews to the task to be done and give them supervision that will insure high worker and crew efficiency. He'll time the tasks to be done with the availability of the laborers or craftsmen to do them. And he'll constantly gather information on progress, check it against his schedule and step it up if it falls behind.

Whether he considers his objective the increasing of productivity or (more likely) the decreasing of man-hours going into the job, the constructor knows his basic task is to control the labor variable, save on manpower costs just as he hopes to find savings in the costs to him of materials, machinery and money. And the smart construction man considers control of this manpower factor to be his personal problem—not a problem for the union delegate, the labor leader or the workingman.

It is all well and good to talk about a "day's work for a day's pay." And perhaps simple justice demands more work for more pay. But it is realistic to assume, except in the area of eliminating wasteful work practice clauses from labor contracts, that the securing of such quid pro quo is more management's responsibility than it is labor's. Construction's tradesman can't very well give more work for his higher wage unless construction's managers truly work at making this possible for him.

Of course, the inefficient worker can improve his efficiency solely through his own efforts—by doing better work and by wasting less time. But once his efficiency is improved, to improve his productivity—help him do the job in fewer hours—will take improved management of his efforts. It will take better planning, organizing, directing, coordinating and control. Only through improvement of these managerial processes will construction men assure themselves of the improved day's work they want for the improved day's wage.

Reason for Optimism

Several sound indicators show construction forging ahead. In the past two weeks ENR has been able to publish stories saying:

There will be 7% more engineers working for consulting firms by summer than there were in March. Construction equipment makers see their 1959 sales topping 1958 by 21%. Analysis of 1958's business failures among contractors shows they were mostly in the first half.

Preliminary returns to an annual ENR survey show that highway and bridge contracts could top $5 billion and hit a new record this year. And finally, the first-quarter contract award figures topped 1958 by 20%.

All these indicators led to the story in this issue (p. 21) about where we're going in the second quarter. And this, too, looks good. Construction should continue to forge ahead—measured by contract awards—in most of its categories. Private construction, which romped through the first quarter for a 30% increase in dollar volume over 1958, looks good again in the second quarter. The private mass housing category may not keep up the pace of the first three months, but it is very encouraging to be able to predict that industrial building should continue its strong recovery.

We think the facts reported on construction's business activity in the past few weeks have been important. We think our forecast in this issue of healthy improvement for the second quarter is important. The quarter ahead can be a vital one for the construction industry per se as well as for the industry's continued influence on overall economic recovery.

We recognize that a general improvement in construction activity doesn't mean something for everybody. But we submit that any individual's personal chances of cashing in on the improved construction business ahead depends in part on his recognizing the general situation that will prevail and approaching it as it deserves to be approached—cautiously, but optimistically.

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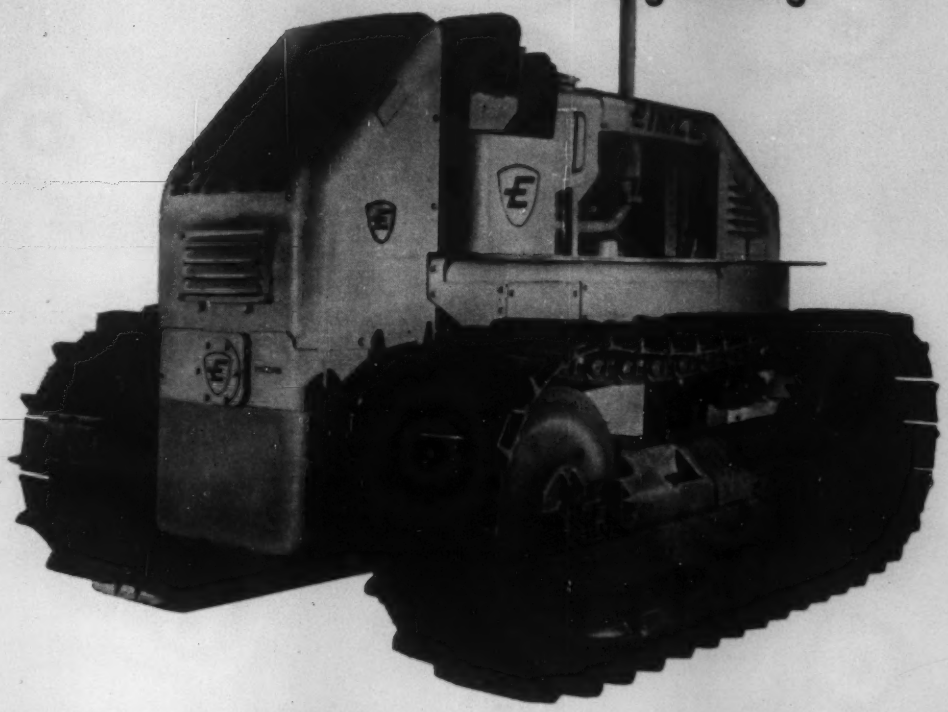

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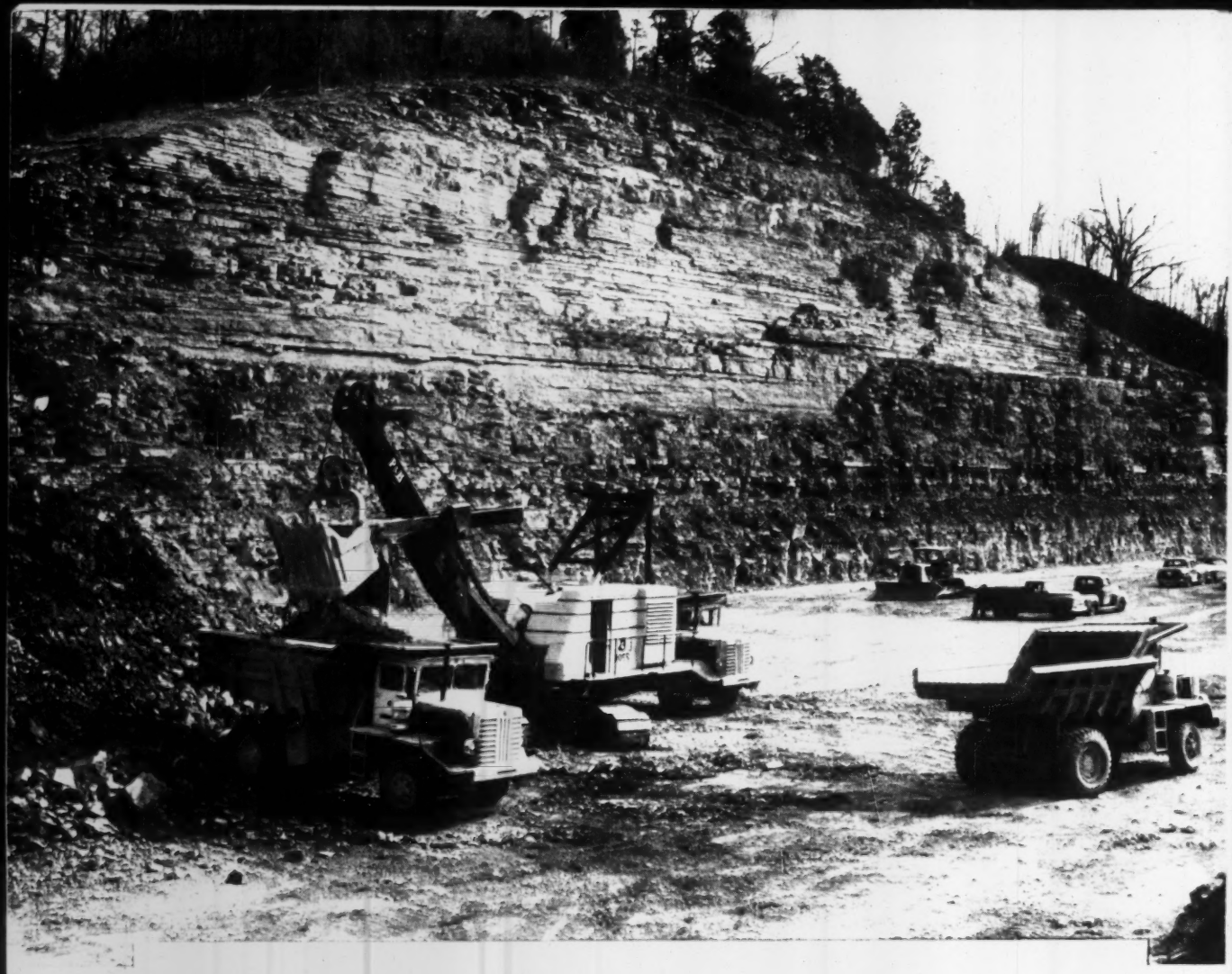

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